PACKAGE engineering

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OCTOBER 1961

VOLUME 6 • NUMBER 10

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PACKAGE engineering

OCTOBER 1961 • VOLUME 6 • NUMBER 10 • AN ANGUS J. RAY PUBLICATION

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Package Engineering is indexed in Engineering Index

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A note from the Publisher

November 7 to 10 is packaging week in Detroit

While discussing the AMA National Packaging Exposition on the eve of its opening last spring, I mentioned the Packaging Machinery Manufacturers Institute Show to be held in the fall.

Now, on the eve of the Packaging Machinery Manufacturers Institute Show, November 7-10, let me mention that the AMA National Packaging Exposition will be held in New York City's Coliseum in April, 1962 . . . six months after the PMMI Show.

Both shows are certainly worth attending, and each show approaches packaging entirely differently. The National Packaging Exposition is basically about *packages* and the PMMI Show is basically about *packaging*.

The PMMI Show to be held in Cobo Hall in Detroit, November 7-10, is especially timely, following so closely the hearings on packaging and labeling practices in Washington, and because of the increased interest and activity in packaging on the part of the Food and Drug Administration.

Since only one hearing on packaging and labeling has been held so far, it would be impossible to determine exactly what the results will be. However, you can be sure that accidental short weight or underfill will get no sympathy from the FDA. With today's packaging machinery there is little excuse for accidental shortages in packages, and the FDA knows this.

If your packaging machinery is old and no longer accurate, you have no choice but to replace it with machinery that *is* accurate. You can see working exhibits at this show of the very latest developments in packaging machinery.

We feel that the PMMI Show is so important we are previewing it this month, although the show is still several weeks away. We are doing this to give you ample time to study the data about the exhibitors in our editorial section and the supplementary information in the advertisements which might relate to your own problem.

There is ample time to discuss your particular problem with your associates in view of what is being exhibited. There is time to make plans to attend if you have not already done so. The latter is *most* important since the PMMI Show will not be held again for two years.

In this issue you will find a comprehensive run-down on what is being exhibited, plus a handy pull-out section in the center spread that lists exhibitors alphabetically and their hotel headquarters.

Although we are covering the show in October, there will be show exhibitors advertising in our November issue, too—so check both October and November issues carefully for exhibitor information in the advertisements.

The PACKAGE ENGINEERING staff will be in Booth 339. We will look forward to seeing you there.

Angus J. Ray

Publisher

PACKAGE engineering®

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For your calendar

October 1-4. Produce Packaging Association 11th Annual Convention and Exposition:
Chase–Park Plaza Hotel, St. Louis, Mo. Contact: Robert L. Carey, executive secretary, Produce Packaging Association, P.O. Box 29, Newark, Del. *Telephone: ENdicott 8-2906.*

October 4-6. AMA orientation seminar on plastic containers:
Hotel Astor, New York, N.Y. Contact: John L. Wood, packaging coordinator, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

October 10-12. Department of Defense (Director of Defense Research and Engineering) 30th Symposium on Shock, Vibration and Associated Environments:
Statler Hilton Hotel, Detroit, Mich. Contact: Code 4021, U.S. Naval Research Laboratory, Washington 25, D.C. *Telephone: JOhnson 3-6600, Ext. 2220.*

October 11-13. Quartermaster Association Convention:
Atlanta Biltmore Hotel, Atlanta, Ga. Contact: The Quartermaster Association, 1026 17th St., N.W., Washington 6, D.C. *Telephone: REpublic 7-6606.*

October 18-20. Packaging Institute 23rd Annual National Packaging Forum:
Contact: Charles A. Feld, exec- Biltmore Hotel, New York, N.Y. utive director, Packaging Institute, 342 Madison Ave., New York 17, N.Y. *Telephone: MUrray Hill 7-8875.*

November 7-10. Packaging Machinery Manufacturers Institute Show of 1961:
Cobo Hall, Detroit, Mich. Contact: W. L. Redding, Hanson & Shea, Inc., One Gateway Center, Pittsburgh 22, Pa. *Telephone: ATlantic 1-8552.*

November 8-9. PMMI Preventive Maintenance Conference-Workshop:
Cobo Hall, Detroit, Mich. Contact: Richard Wellbrock, New Jersey Machine Corp., 1600 Willow Ave., Hoboken, N.J. *Telephone: OLdfield 9-0483.*

November 13-14. Society of Packaging & Handling Engineers 1961 National Packaging and Materials Handling Competition, and 7th Annual Eastern Packaging and Handling Show:
Fifth Regiment Armory Hall, Baltimore, Md. Contact: C. Telfair Leinbach, Jr., 3120 St. Paul St., Baltimore 18, Md. *Telephone: HOpkins 7-6363.*

January 21-24, 1962. Canning Machinery and Supplies Association 54th Annual Exhibit:
Americana Hotel, Bal Harbour, Miami Beach, Fla. Contact: W. D. Lewis, secretary-treasurer, Canning Machinery and Supplies Association, 4630 Montgomery Ave., Washington 14, D.C. *Telephone: OLiver 6-6979.*

January 22-24, 1962. National Canners Association 54th Annual Convention:
Americana Hotel, Bal Harbour, Miami Beach, Fla. Contact: R. F. Alexander, National Canners Association, 1133 20th St., N.W., Washington 6, D.C. *Telephone: FEderal 8-2030.*

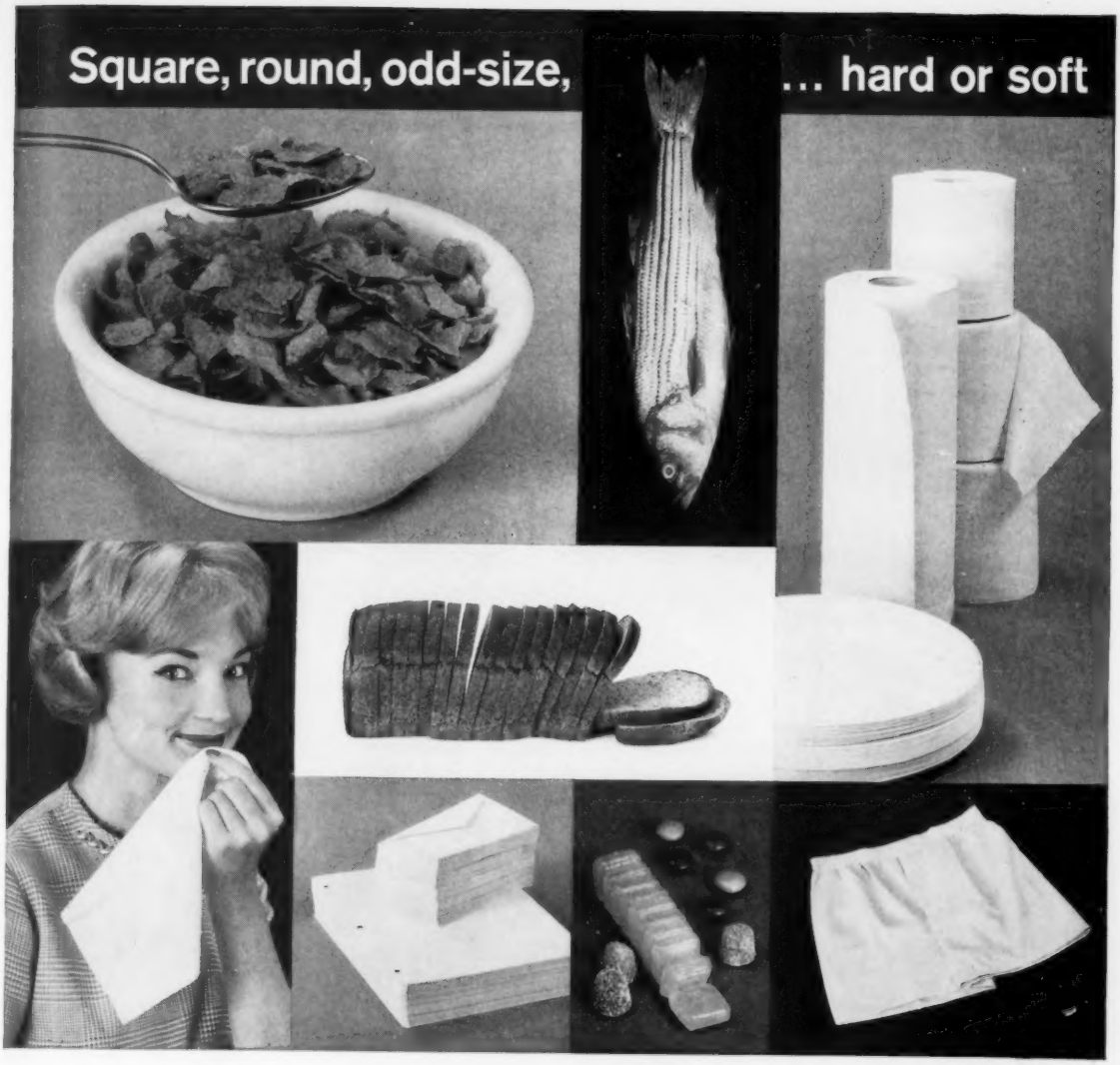
February 6-7, 1962. University of Wisconsin Engineering Institute on packaging line problems:
Wisconsin Center Building, Madison, Wis. Contact: Richard A. McCormick, institute coordinator, department of engineering, University of Wisconsin, Madison, Wis. *Telephone: ALpine 5-3311, Ext. 2815.*

February 8-9, 1962. University of Wisconsin Engineering Institute on practical package development:
Wisconsin Center Building, Madison, Wis. Contact: Richard A. McCormick, institute coordinator, department of engineering, University of Wisconsin, Madison, Wis. *Telephone: ALpine 5-3311, Ext. 2815.*

March 13-14, 1962. Chemical packaging committee of the Manufacturing Chemists' Association. 2nd symposium on packaging of chemical products:
Chase-Park Plaza Hotel, St. Louis, Mo. Contact: Richard D. Lambert, Manufacturing Chemists' Association Inc., 1825 Connecticut Ave., N.W., Washington 9, D.C. *Telephone: HUdson 3-6126.*

April 9-11, 1962. AMA 31st National Packaging Conference:
Roosevelt Hotel, New York, N.Y. Contact: John L. Wood, packaging coordinator, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.*

April 9-12, 1962 AMA 31st National Packaging Exposition:
Coliseum, New York N.Y. Contact: John L. Wood, packaging coordinator, American Management Association, 1515 Broadway, New York 36, N.Y. *Telephone: JUdson 6-8100.* *(End)*



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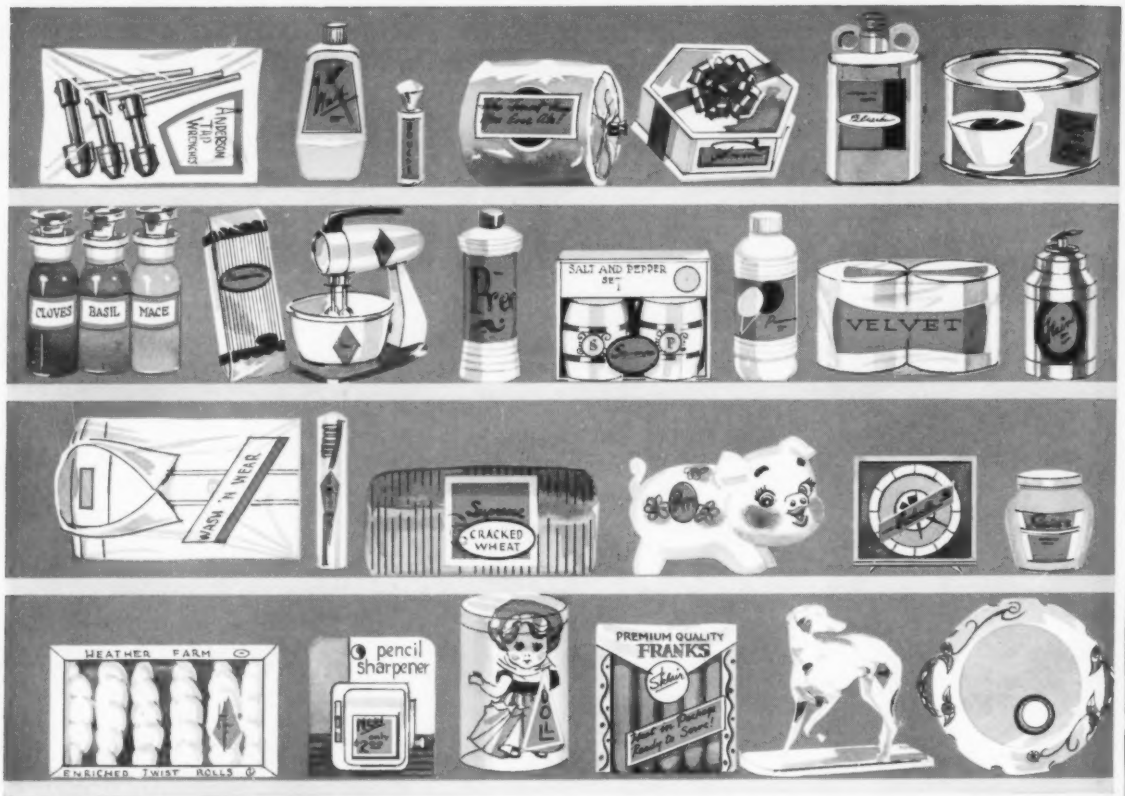

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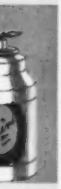

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The PULSE of packaging

Trends to watch:

Use of fibre cans for motor oil and frozen juice concentrates appears headed for success. Some companies have them in the market test stage while others are moving into production with them.

These containers are spiral-wound cans with foil/board/foil laminated bodies and metal ends. Other barrier or liner materials are also available.

Key detail of construction: the folded lap seam of the laminated foil liner, inside the can body, which prevents wicking of contents through to the paperboard core.

We hear fibre cans with tinplate ends pose few production line problems. One large motor oil packager reports a slight modification of closing machinery to get a good seal.

A Florida citrus packer says its composite cans went through an unscrambler, steam sterilization, a 24-head filler, a conventional closing machine and a high-pressure water spray at 575 cans/min.—all without incident; even withstood blast freezing at —40°F. and automatic casing.

Price "quotes" suggest these cans run 15 per cent less than equivalent lithographed tinplate cans. They weigh slightly more than all-aluminum cans but less than half that of their all-tinplate equivalent.

Questions of just how to organize the management of packaging continue to draw attention among packers. One of the most recent expressions comes from Peter B. Baker, packaging specialist, Arthur D. Little Inc. He suggests organizing packaging along horizontal rather than vertical lines.

He told the 2nd INTERNATIONAL MARKETING FORUM, conducted for Harvard Business School by Inpak Systems, to have a few packaging specialists capable of working with the different groups in and out of a company. Mr. Baker thinks this is better than a vertical type packaging organization which often duplicates functions of other departments in a company.

"Packaging is not a day-to-day function of top management," Mr. Baker said. "But it is of such vital importance that it must be understood in all its complexity by top management."

Are crooks copying your packages and filling them with substitute products that resemble yours? THE FAFNIR BEARING CO. recently found counterfeit cartons being printed and packed with "surplus" bearings in Massachusetts and Connecticut.

The company, working with police and prosecuting authorities, found the fraudulent containers were almost identical with legitimate Fafnir boxes. Police confiscated thousands of the counterfeits plus printing plates. Arrests have been made and one person has been tried and convicted.

We understand the railroad people are worried about the quality of corrugated boxes for fresh produce. Some think that testing burst strength at 50 per cent R.H. is not adequate and that testing at 85 per cent would give more realistic results.

Reports indicate that in many instances shipping containers for oranges and apples and the like are not holding up in refrigerator cars. Some container testing experts think the answer lies in proper testing under high humidity conditions with enough strength being required so that boxes hold up under these conditions.

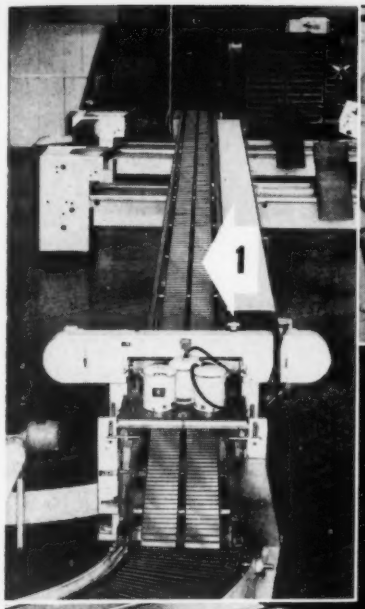
Development of a nonmetallic valve and self-sealing cap (which acts as a cork between uses) now makes possible the packaging of antiperspirants in aerosol containers. Heretofore the aluminum salts of antiperspirants have crystallized and clogged the aerosol valve.

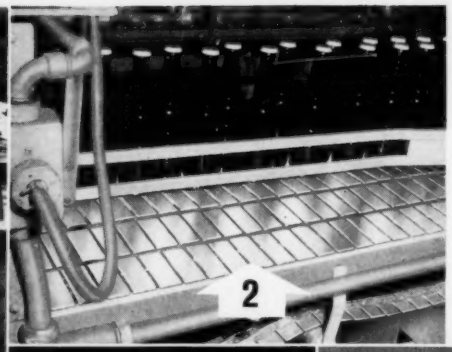
Groups in the news:

NATIONAL INSTITUTE OF PACKAGING, HANDLING AND LOGISTIC ENGINEERS *conferred its annual achievement awards on Edward C. Campbell, head, warehouse operations branch, Navy Bureau of Supplies and Accounts, and Leslie C. Heller, chief civilian of the Office of Naval Material, packaging branch.*

PACKAGING INSTITUTE now has a task committee to deal with the problems brought to light at the recent Senate committee hearings on packaging and labeling practises. PI plans to present recommendations to the appropriate regulatory bodies to eliminate the confusion and ambiguities in present regulations about content statements and other aspects of packaging which consumers might misunderstand.

PI's hardware and housewares packaging committee reports having 150 entries for its HARDWARE PACKAGING EXPOSITION being held October 2-6 during the National Hardware Show, McCormick Place, Chicago. Michigan State University packaging students will be on hand at this exposition to answer technical questions about packaging. *(Turn page)*





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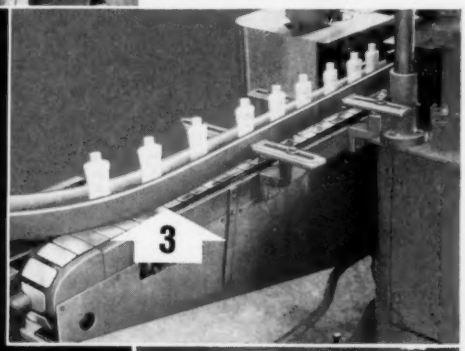

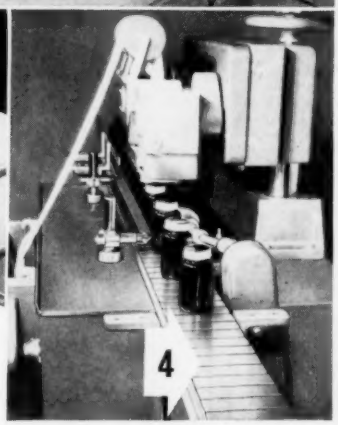

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from ALCOA October, 1961

Current Foil Packaging Report

Alcoa® Aluminum Foil fills a need in packaging: some interesting attributes and opportunities. You know, of course, that aluminum is odorless, tasteless, hygienic, nonabsorptive, opaque, nontoxic, dead-folding and that it has high reflectivity for thermal radiation, high thermal and electrical conductivity, water vapor and gas transmission resistance and light weight. Your wife knows that it is pleasing in appearance.

⧖

Known properties—new concepts

Thermal conductivity . . . Aluminum foil is several hundred times more effective in carrying off heat than any other paper or plastic film used in packaging. Suppose, then, that you have a heat-sensitive product to be packaged. The package is to be stored in a warehouse with windows which let the sun's rays shine on the outer layers of bags or cartons. Conventional nonfoil packages will absorb heat. Foil packages, on the other hand, with the foil outside, will reflect 90-95 per cent of the radiant thermal energy while its high thermal conductivity will conduct the balance of the heat from package to package. Thus, the temperature of a package in a far, dark corner of the warehouse would probably be the same as that of a similar package in the direct light of the sun. This principle has been used in aluminum cooking utensils for many years, and it makes aluminum foil a "natural" for cook-in packages as well.

⧖

Thermal reflectivity is a property of aluminum foil that has been used widely in the insulation field. It has been only recently, however, that this property has been applied to packaging by way of foil-lined board and corrugated cartons. The "iceless icebox," beer, frozen food and ice cream cartons point up the fact that packagers can borrow from the experiences of nonpackaging applications.

⧖

Freedom from irradiation damage and transparency to radiation are unique properties of aluminum containers that will make them a "natural" should irradiation sterilization become widely used.

⧖

Electrical conductivity is a property of aluminum that has been used to advantage by manufacturers of bus bars, conductor cable, foil-wound transformers and coils. Packaging visionaries are asking themselves if this property can't be projected in a "plug-in" carton which *packages*, *heats* and *serves* the food. An interesting thought.

⧖

One of the really big things that can be said of aluminum foil is that it's practically impermeable to gases and water vapor. Many dehydrated foods, boilable and liquid packaged products require barrier properties equal to those of a rigid can. In cases such as these, aluminum foil is the *prime* barrier in a flexible package.

⧖

Another unique property of aluminum is its capacity for being welded ultrasonically, Alcoa pioneered the development of this method for joining aluminum and is currently furnishing ultrasonic foil splices from all of its foil mills.

Research is progressing toward development of "molecular," "wash" and "primer" coatings which permit improved rotogravure and offset lithography on extremely bright, lay-flat foil/paper laminations. Adhesion of fade-resistant lacquers employing transparent pigments is another area in which research seeks to improve the natural visual properties of aluminum foil.

⧖

New concepts and customer service are very much a part of the routine at Alcoa. Packaging problems and inquiries by the thousands have been handled successfully through Alcoa's Research Laboratories. If the answer to *your* packaging problem isn't already there, then the facilities to find it are.

Your Complete Packaging Service Center

to ALCOA

I want an Alcoa representative to contact me with regard to

- ☐ Foil Packaging
- ☐ Aluminum Closures
- ☐ Cans and Containers

☐ Foods	☐ Chemical and Household Products
☐ Frozen Foods	☐ Dairy Products
☐ Meats	☐ Beer
☐ Fish	☐ Industrial Parts
☐ Pet Food	☐ Instant Beverages
☐ Pharmaceuticals	☐ Tobacco Products
☐ Drugs	☐ Petroleum Products
☐ Cosmetics	☐ Condiments
☐ Toiletries	☐ Seeds
☐ Wine	☐ Others
☐ Liquor	

(Fill in specific applications)

_____

_____

_____

Entertainment at Its Best
ALCOA PREMIERE with Fred Astaire as Host
Tuesday Evenings, ABC-TV

ALCOA ALUMINUM

BETTER PACKAGING

Aluminum Company of America
1697-K Alcoa Building, Pittsburgh 19, Pa.

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

Packaging across the seas:

Jon Schmidt, president of JOKA, Denmark maker of reclosable bags, foresees improved and less expensive resealable closure bags. He predicts the early development of completely automatic machinery to produce them in sufficient quantity for consumer and industrial use.

Reports from KENNEDY CAR LINER AND BAG CO., INC. indicate that bag makers in Denmark, Sweden, Norway, France, England, and other nations are now furnishing these bags for such products as corn flakes, biscuits, shirts, underwear, and hosiery, as well as spare parts and electronic equipment.

Representatives from Finland, Germany, Japan, and Canada recently attended CLUPAK's international technical conference at Sea Island, Ga. The group took special note of the latest techniques in making kraft multiwall bag paper.

THOMAS ENGINEERING CO. *has licensed* MANESTY Machines, LTD., *Liverpool, England, to manufacture and market its Teko coders outside the Western hemisphere. This company made Thomas its United States representative for the Manesty line of pharmaceutical and packaging machinery.*

Notes from the government:

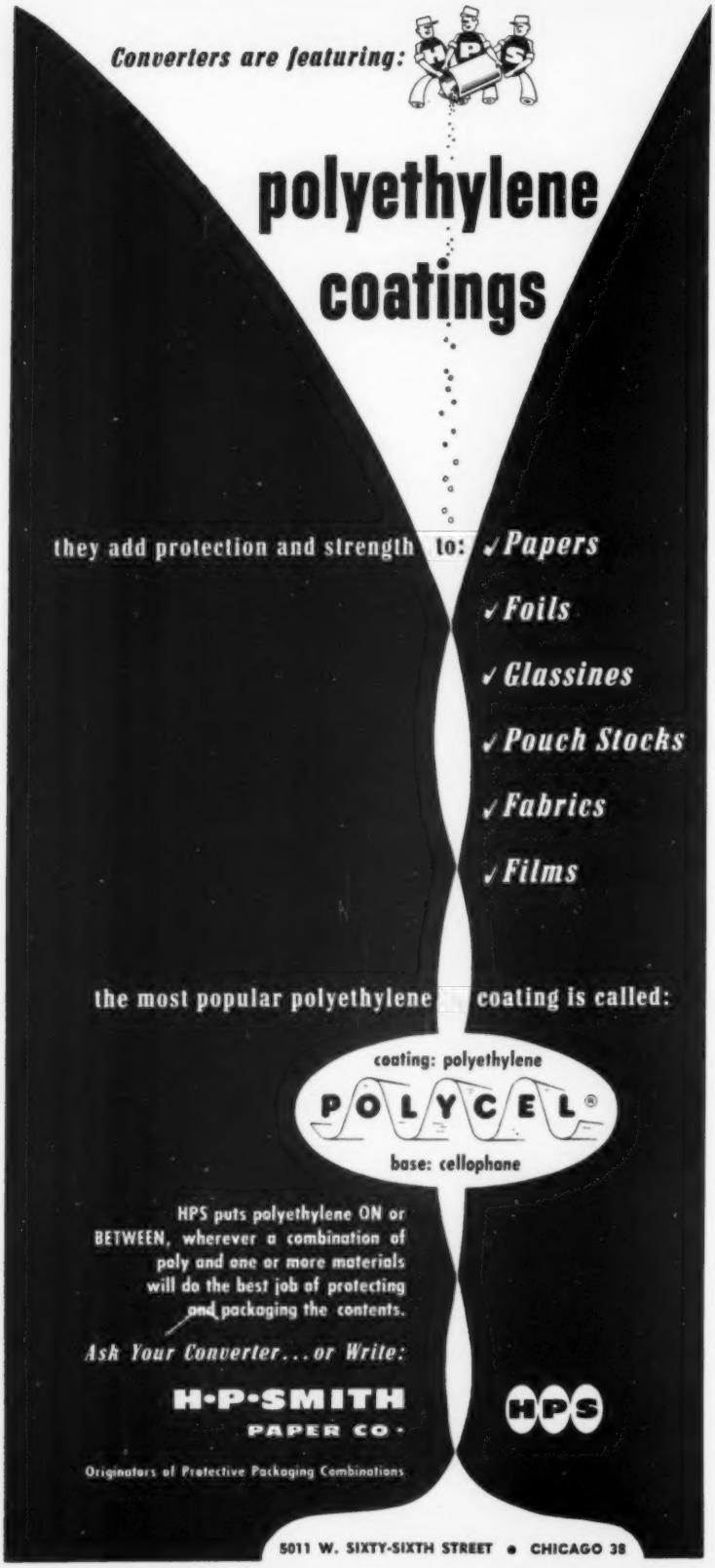
The Containers and Packaging Division, BUSINESS AND DEFENSE SERVICES ADMINISTRATION, U.S. Department of Commerce, has named Richard N. Hoerner, Jr. assistant director for mobilization planning. Mr. Hoerner is on loan for service (without compensation) in this post from his permanent position as marketing planning manager of Hoerner Boxes, Inc., Keokuk, Iowa.

Other news from BDSA is that it is now issuing mid-year industrial review and outlook studies which cover 19 key industries including glass containers, converted flexible packaging products, fibre boxes, folding boxes, metal cans, and steel shipping containers. Further details are available from the Containers and Packaging Division, BDSA, U.S. Department of Commerce, Washington 25, D.C.

Latest reports from the FOOD AND DRUG ADMINISTRATION *indicate its national investigation of short-weighting has resulted in 99 seizure actions throughout the country.*

"While our survey thus far shows that the over-all percentage of food products short in weight is small, at the same time we are shocked that some manufacturers have failed to give the consumer full measure," declared George P. Larrick, FDA commissioner.

The FDA says variations from stated weights are allowable when due to normal moisture loss or unavoidable variations that occur in machine packaging. The seizure actions being brought by it are in cases where the average weight is below the net weight declared after allowance is made for moisture loss and other unavoidable variations. *(Turn page)*


Converters are featuring:
HPS
polyethylene coatings
they add protection and strength to:
✓Papers
✓Foils
✓Glassines
✓Pouch Stocks
✓Fabrics
✓Films
the most popular polyethylene coating is called:
coating: polyethylene
POLYCEL®
base: cellophane
HPS puts polyethylene ON or BETWEEN, wherever a combination of poly and one or more materials will do the best job of protecting and packaging the contents.
Ask Your Converter... or Write:
H·P·SMITH PAPER CO.
Originators of Protective Packaging Combinations
HPS
5011 W. SIXTY-SIXTH STREET • CHICAGO 38

FDA also plans to take a closer look at improper labeling. "For several years we have not been able to give adequate attention to honest packing and prominent labeling in the food field because of the pressure of other duties," Mr. Larrick said.

"Through educational efforts and a limited number of regulatory actions we have tried to keep industry aware of its responsibilities. However, from several sources we have reports of continued abuses, and these are being borne out by the survey now underway. These abuses must be corrected," he added, noting that a total of 4,436 samples have been examined in the recent survey.

What people are doing:

The newly created position of packaging development coordinator for Vick Manufacturing Div. of Richardson-Merrell Inc. will be filled by JOHN V. RYDEN.

WILLIAM E. YOUNG *has established the William E. Young and Co., Little Falls, N.J., for packaging consultation and development.*

ROBERT B. MORGAN, plant manager of Ferry-Morse Seed Co.'s headquarters in Moutain View, Calif., is moving to Fulton, Ky., where he will be in charge of operations and will supervise warehouse operations in several branches. JOHN J. SULLIVAN, former plant superintendent at Fulton, is now plant manager at Mountain View.

C. W. BARR is now divisional vice president and general manager of Riegel Paper Corp.'s folding carton division. Other new Riegel vice presidents are: paper division—W. M. RIEGEL, sales; DR. W. A. SCHENCK, manufacturing. Pulp and paperboard division—WINTHROP ENDICOTT, sales; J. B. LATTAY, woodlands; C. C. PETERS, manufacturing. Flexible packaging division—E. N. LEONARD, manufacturing; N. W. POSTWEILER, sales; J. V. SHEA, sales (Lassiter); and L. W. WELLER.

Sales manager of Standard Packaging Corp.'s national metalizing division is ROGER W. MAJOR. *(End)*

IT'S BOUND TO BE BETTER WITH A USS STEEL STRAPPING MACHINE

A machine like this can save you $6,000 a year...and more!

It's the USS Model 12 Automatic Round Steel Strapping Machine. The Joliet Works of U. S. Steel's American Steel and Wire Division uses it to strap all their nail cartons. Formerly, it was necessary to stop the conveyor line about 20 times per day to change carton sizes. Each change-over took over five minutes. With installation of the Model 12, the change-over takes only a matter of seconds. Previous strapping methods required two-way tying for sufficient strength. This has been eliminated with the round steel strap. Now, one round steel strap gives the same strength, thus reducing strapping costs by shaving material needs by thousands of feet per day.

At ASW, the Model 12 straps thousands of nail cartons daily with strong, 16-gauge USS Round Steel Strapping. In addition to practically eliminating change-over time, the labor-saving Model 12 takes only 7½ sq. ft. of floor space and weighs only 1,300 pounds.

Find out how the automatic Model 12 can help cut costs and speed production in your operation. See our new industrial film showing many possible applications for the Model 12. Send the coupon.

U. S. Steel Supply Division of United States Steel

TRADEMARK

U. S. Steel Supply
U. S. Steel Corporation
208 South LaSalle Street
Chicago 4, Illinois

Please send me more information on:

☐ USS Model 12 Automatic Round Steel Strapping Machine.
☐ The new industrial film entitled, "Tie This."

Name_____

Company_____

Address_____

City_____ Zone____ State_____

STRETCHABLE PACKAGING MEMO

Stretchable packaging stretches across the natio

The following Companies have used stretchable packaging in products as indicated

Bristol-Myers Company
Ban—Trushay

Cable Electric Company
Night-Light

Chesebrough-Ponds Company
Cutex Nail Polish—Polyderm—Angel Touch Make-Up & Date Case—Moisture Creme—Lip Ice—Cutex Nail Flex—Tact

Colgate-Palmolive Company
Halo Shampoo—Veto Deodorant

Food Fair Company
Vitamins

Hubley Toy Company
21 Different Toys

Hudson Vitamin Company
Vitamins

Johns-Manville Company
Tile Scriber

Kedrin Pharmaceuticals, Inc.
Kedrin Tablets

Lanolin Plus, Inc.
Color Plus Nail Polish—Complexion Control

Lehn & Fink
Tussy Deodorant

Marrud, Inc.
Norwall Pipes

McKesson & Robbins
Vitamins (Bexel & Bexelettes)

Miles Laboratories
'One-A-Day' and Chocks Vitamins

Myzon, Inc.
Myzon (Veterinarian Product)

Pillsbury Company
Sweet-10

R. C. A.
Antenna

Revlon
Living Curl

Romanoff Caviar Company
Caviar

Singer Sewing Machine Co.
Trim-Handy (Cutting Machine)

E. R. Squibb
'Vigran' Vitamins
Orahesive (Denture Powder)
Sweeta (Concentrated Sweetener)

Sterling Drug, Inc.
Midol Tablets

Swingline, Inc.
Stapling Gun

INPAK SYSTEMS, INC. 441 Lexington Ave. New York 17, N. Y.

• NATIONAL NETWORK OF LICENSEES

William B. Crane Co., originators of the stretchable packaging concept has announced the completion of a national network of licensees with the licensing of Southern California Carton Company. This new packaging concept is now available from coast to coast and in Canada, from the following materials suppliers:

DOWNINGTOWN PAPER COMPANY

FEDERAL PAPER BOARD COMPANY, INC.

THE NEVINS COMPANY

SOUTHERN CALIFORNIA CARTON COMPANY

AND IN CANADA
COLLETT- SPROULE BOXES, LTD.

Additional licensees will be announced.

• MACHINERY INTERESTS TO INPAK, SYSTEMS INC.

Inpak Systems, Inc., 441 Lexington Avenue, New York, has been designated by the William B. Crane Co., as their choice for the mechanical developments and leasing of stretchable packaging machinery. Mr. Crane assigned his patent application on stretchable packaging machinery to Inpak.

Three years ago, the William B. Crane Co., and its original licensees Downingtown Paper Company and the Nevins Company introduced the stretchable packaging concept. The basic concept was that the product and the package are one. The validity of the concept has been proven by the adaptability of stretchable packaging to a great number of varied products as shown in the left column.

Actually, stretchable packaging makes a plastic bottle inside a card rim, the product becomes the mold, combining the visibility of clear plastics with the protection of paperboard, making for a package that:

—economically uses materials
—protectively encases the product in plastics
—visually enhances the production display

The result is a tamper-proof merchandising package which hangs or stands and gives a sense of added value to the product.

WILLIAM B. CRANE CO.

141 East 44th Street
YUkon 6-4790

Expanda-Kraft offers "strongest, toughest shipping protection" says Owens-Illinois Executive

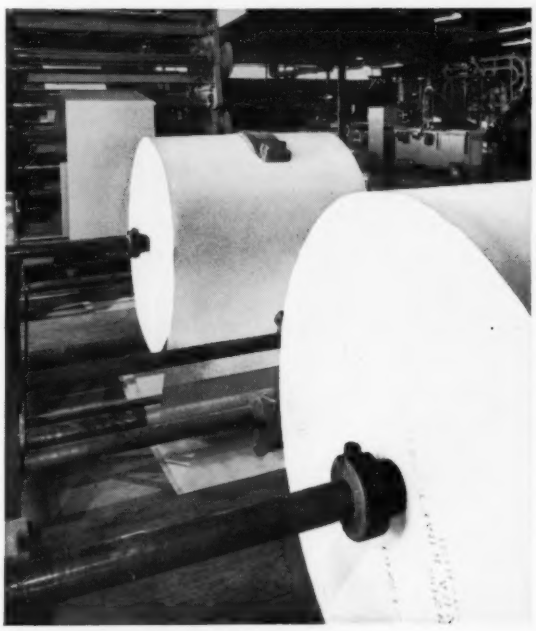
"We can recommend Expanda-Kraft unhesitatingly whenever a customer asks for strong, tough, maximum shipping protection that can be provided for his product—no matter whether it be alfalfa or yeast, asphalt or zinc sulphate, or anything in between," says P. L. Chism, Plant Manager, Owens-Illinois' Multiwall Bag Division, Valdosta, Ga.

"In heavier bag weights, the Expanda-Kraft paper actually saves the customer money by reducing the total basis weight required, while furnishing more strength than can be available with comparable weights of standard flat kraft.

"Expanda-Kraft produces a sharp and clear printed image because of its low absorbency. Not only do we score an impressive bonus in appearance, thanks to Expanda-Kraft, but it also helps us cut down on ink and glue costs because of this lower absorbency," Mr. Chism reports.

"Our customers particularly appreciate the porosity of Expanda-Kraft paper, for it facilitates the escape of air during filling, a vital factor in maintaining efficient filling rates with valve-type bags. Ordinarily, this kind of porosity might connote high absorbency, but such is not the case with Expanda-Kraft."

Find out what Expanda-Kraft® can do to improve your package. *The H&W Division of Scott does not make bags.* But we do make Expanda-Kraft paper in basis weights of 40 to 100 lbs. and in colors of Natural, Shell White and a clean, bright White. For information and samples, write Hollingsworth & Whitney Division, Scott Paper Company, 230 Park Avenue, New York 17, N. Y. or 111 West Washington Street, Chicago 2, Ill.



Hollingsworth & Whitney Division
SCOTT PAPER COMPANY

NEVINS'

STRETCH–PAK®

display packages put the mood and the message *clearly* across!

WHAT is clearly new, clearly different about Nevins' Stretch-Pak display packages is the way it surrounds each product with a sales-stimulating display — **without obstructing the customers' clear view of your product!** Your product appears to float in air, making it easy to see, easy to buy. Bright, easy-to-spot Stretch-Pak display packages can be hung from pegs . . . or made self-standing for stacking. Full-dimensional Stretch-Pak display packages can enfold more than one product on the same card (as Pond's did) in virtually any size and shape. And your products can be packaged in the Nevins' plant or on Nevins' Stretch-Pak machines purchased for your own in-plant packaging.

To put the mood, the message — and your sales goals — **clearly** across, use Nevins' Stretch-Pak display packages. Write or call today for the full story!

The newest, fastest **NEVINS STRETCH-PAK PACKAGING MACHINERY.** See it in action yourself at the P. M. M. I. SHOW, Nov. 7-10, COBO HALL, Detroit, Michigan. Booth # 824 - 826 - 828.

STRETCH-PAK Division

THE NEVINS *COMPANY*

Executive Sales Offices and Plant: Clifton, New Jersey • PRescott 9-1700

The trademark, Stretch-Pak®, is owned by The Nevins Company. Other trademarks shown here are owned by the well-known manufacturers of the products displayed within these packages.

DESIGNING, PRINTING AND MANUFACTURING PRECISION FOLDING CARTONS, DISPLAY CONTAINERS AND MULTICOLOR LABELS SINCE 1902

THE ARKANSAS TRAVELER'S GONE FISHIN' . . .

. . . and all that's left is its corrugated boathouse. Hoerner has been building corrugated containers to house Arkansas Traveler Boats for ten years. Hoerner packaging engineers designed special containers to keep boats shipshape in shipping and ready to go fishin'. This is just one of many Hoerner corrugated container success stories. We can make your product more profitable through improved packaging, too.

HOERNER BOXES, INC.

CORRUGATED PACKAGING SPECIALISTS FOR MID-AMERICA

GENERAL OFFICES: 600 Morgan Street, Keokuk, Iowa • MILL: Missoula, Montana • PLANTS: Fort Smith and Little Rock, Arkansas; Danville and Waukegan-Gurnee, Illinois; Des Moines, Keokuk and Ottumwa, Iowa; Minneapolis, Minnesota; Tupelo, Mississippi; Springfield, Missouri; Sand Springs, Oklahoma; Sioux Falls, South Dakota; Fort Worth and Mission, Texas • ASSOCIATE: Cajas y Empaques Impermeables, S.A., Mexico City D.F., Mexico

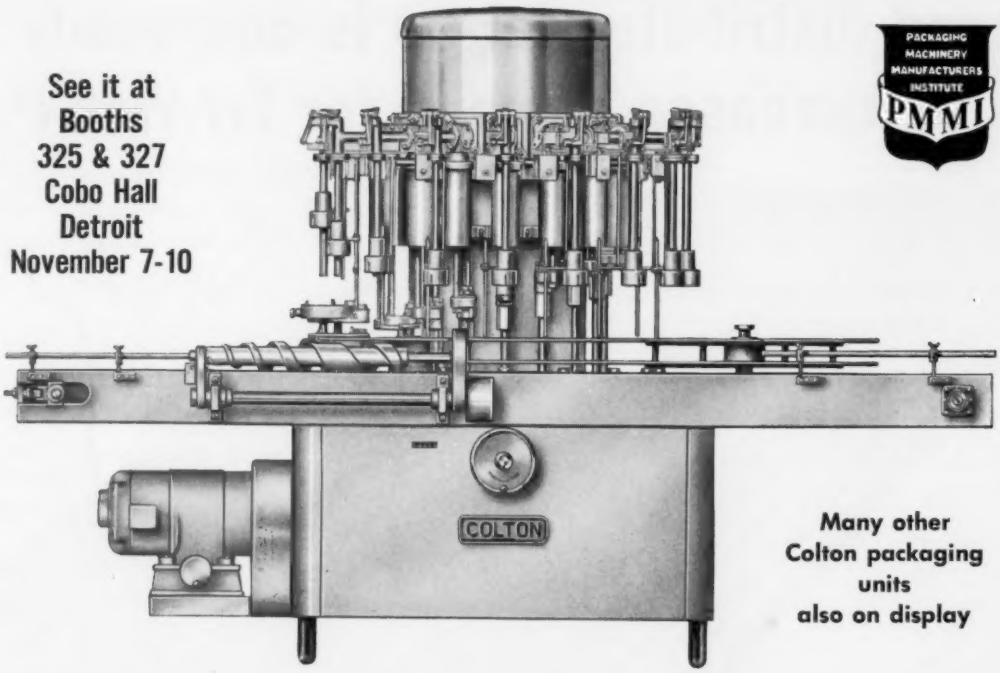
For more information circle No. 214 on Reader Service Card

Circle No. 215 on Card ►

FIRST SHOWING P. M. M. I. SHOW

See it at Booths 325 & 327 Cobo Hall Detroit November 7-10

PACKAGING MACHINERY MANUFACTURERS INSTITUTE PMMI



Many other Colton packaging units also on display

NEWEST from COLTON

Sensational High-Speed 16-Station ROTARY Filler No. 116

Fills up to 320 containers per minute. Fills pastes, creams, liquids into jars, cans, bottles 1½"—4" dia.; height up to 10". Fills ¼ fl. oz. to 32 fl. oz.

- 16 valve, piston and cylinder assemblies.
- Infinitely adjustable "bottom-up" filling platforms for 8" rise.
- Micrometer type quantity adjustment for *exact* fill control on each station. No overfill, no underfill, no waste.
- "No-container-no-fill" mechanism on each station.
- Nozzle-tip no-drip shut-off. Clean operation.
- High speed: 110 to 320 containers per minute; highest production per dollar invested; quick amortization.
- Many other features including Timing Screw container feed.

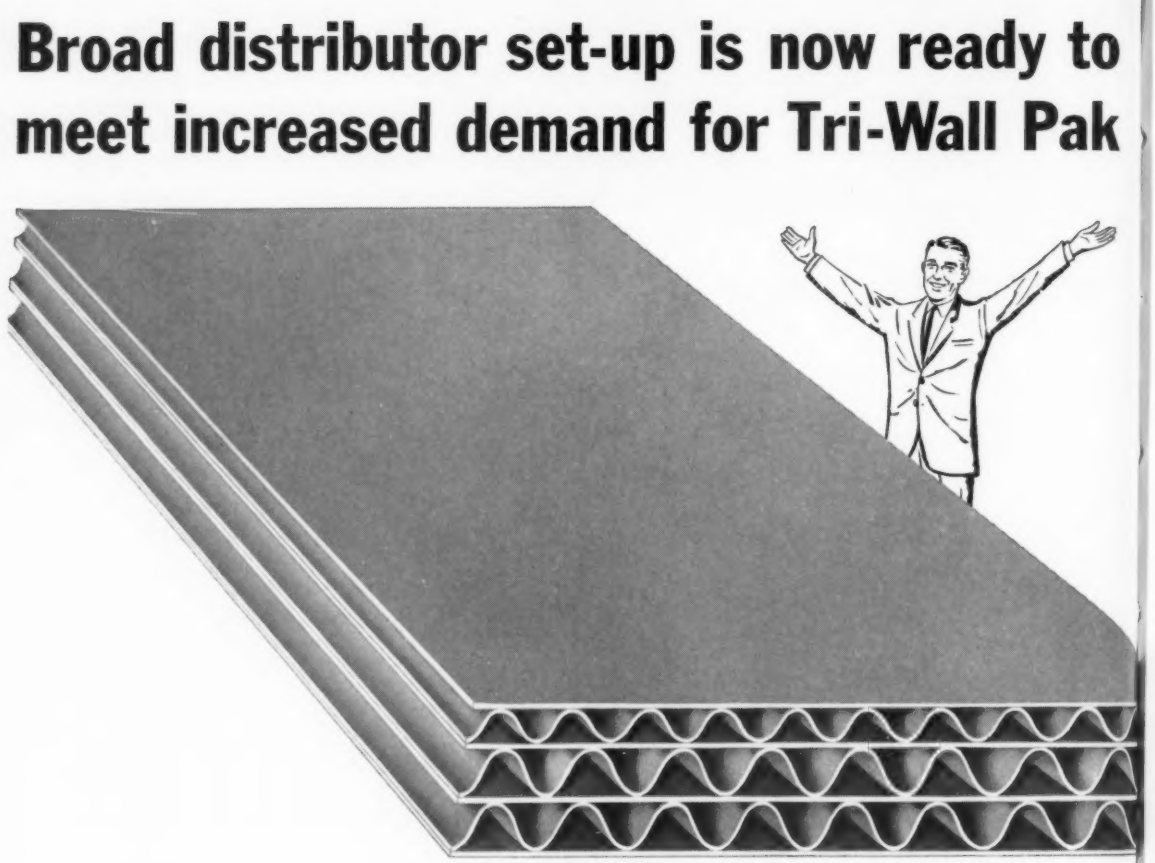
Here's the filling machine that pays for itself quickly and often in high speed operation and in *exact* volumetric fills which save you money on *every* fill because there's no need to overfill to meet regulations. So clean-running there's practically no down-time for clean-up and when you want to change over to another size fill, another container or another product, that's easy, too, because everything is so accessible and change-over kits are quickly available. Brilliantly engineered and precision built in the fine quality tradition and pride that has made Colton a leader for over three-quarters-of-a-century. Solid, rigid, vibrationless, durable and designed for the simplest maintenance. A member of the great Colton family of diversified machines serving most production needs in the food, drug, cosmetic and kindred filling fields. Ask for bulletin.

ARTHUR COLTON COMPANY

DIVISION OF SNYDER CORPORATION

3517 E. LAFAYETTE • DETROIT 7, MICHIGAN

Broad distributor set-up is now ready to meet increased demand for Tri-Wall Pak



Call on these fabricators and distributors for fast service on Tri-Wall Pak containers in any quantity

California

*CADILLAC PRODUCTS PACIFIC COMPANY
2450 Alvarado Street
San Leandro, Calif.
Telephone: EL 7-0530

Connecticut

ROURKE-ENO PAPER CO., INC.
82 Howard Avenue
Bridgeport, Conn.
Telephone: Edison 3-3183

ROURKE-ENO PAPER CO., INC.
261 Weston Street
Hartford, Conn.
Telephone: Jackson 2-8211

Florida

MILITARY PACKAGING CO. OF FLORIDA
P. O. Box 460
Orlando, Florida
Telephone: Cherry 1-1188

MILITARY PACKAGING CO. OF FLORIDA
West Coast Branch
P. O. Box 10302
St. Petersburg 33, Florida
Telephone: Dickens 5-7608

Illinois

PAK-RITE CORRUGATED BOX COMPANY
2040 North 15th Avenue
Melrose Park, Ill.
Telephone: TR 5-7665

RILEY & GEEHR, INC.
2749 North Lincoln Avenue
Chicago, Ill.
Telephone: Eastgate 7-8100

*RUDOLPH SCHMIDGALL & SONS, INC.
Div. Riley & Geehr, Inc.
2340 South Springfield Ave.
Chicago, Ill.
Telephone: LA 2-8060

Kentucky

PRESQUE ISLE PAPER PRODUCTS, INC.
1001 W. Oak Street
Louisville, Kentucky
Telephone: 585-5866

Maryland

ARNOLD'S FACTORY SUPPLIES COMPANY
801 S. Charles Street
Baltimore 30, Md.
Telephone: Lexington 9-1613

Massachusetts

*CORRUGATED SERVICE
364 So. Westfield Street
Feeding Hills, Mass.
Telephone: Republic 4-2146

MUTH ASSOCIATES, INC.
300 Main Street
Springfield 8, Mass.
Telephone RE 4-2107

ROURKE-ENO PAPER CO., INC.
851 State Street
Springfield, Mass.
Telephone: Republic 7-4737

Michigan

CADILLAC PRODUCTS, INC.
7000 East 15 Mile Road
Warren, Michigan
Telephone: Congress 4-2525

Sturdy, low-tare containers of triple-wall corrugated are economical solutions to tough industrial and military packaging problems

TRI-WALL PAK offers the ideal combination of properties sought in a material for heavy-duty packaging.

Thanks to its triple row of C-A-A fluting, Tri-Wall Pak is much stronger than regular corrugated board and has consistently proved it could displace plywood, lumber and cleated fibreboard in industrial and military packaging. Both regular and export grades are available in puncture test ratings up to 1100 and in short-column compression ratings up to 145 lbs. per lineal inch.

Containers of almost every size and shape can be designed to meet your needs. We've supplied containers large enough to pack a truck cab... and long enough to pack 25-foot lengths of pipe. We've made 'em as one-, two-, or three-piece units. We've made 'em tall, short, flat, and even triangular. If you have a product that needs rugged protection during shipping, we can design a Tri-Wall Pak container for it. In addition, we can also supply flat sheets of Tri-Wall Pak up to 75 inches wide and 300 inches long for your own fabricating operations.

Tri-Wall Pak can be used to ship machinery, automotive parts, electrical equipment, appliances, metal tubing, metal extrusions, carpeting and other roll goods, hardware, furniture, sheets of metal, plastic or composition, plus hundreds of other items.

Tri-Wall Pak can hold down your packaging costs from both material and packing labor viewpoints. Moreover, its light weight has never failed to result in reduced shipping costs. Due to its great ability to absorb shock, it also offers a cushioning effect not found in conventional packaging materials, permitting it to take hard knocks and general abuse without shattering. And, because the containers are delivered and stored flat, you save on storage space. Finally, Tri-Wall Pak is a clean, smooth packaging material, offering no hazards to workers or contents.

If you are already familiar with the many advantages of Tri-Wall Pak, you'll be glad to know that our new fabricator and distributor program will now insure faster service. If you have not yet discovered the many economies of packaging in Tri-Wall Pak, our packaging engineers are ready to show you how triple-wall corrugated containers can save you money on material, packing labor and freight, while sharply cutting damage claims. For more information and assistance, write TRI-WALL CONTAINERS, INC., 799 Washington Street, New York 14, N. Y., or contact the fabricators and distributors listed below.

The triple-wall construction of Tri-Wall Pak was developed by Tri-Wall Containers, Inc. Manufacture, arrangement of fluting, fabrication and use are protected by U.S. Patents 2,759,523, 2,949,151, 2,969,170 and 2,985,553. Other patents are pending.

Tri-Wall Pak is the registered trademark of Tri-Wall Containers, Inc.

Tri-Wall Containers, Inc.

Missouri

*DURO-FLEX PRODUCTS COMPANY, INC.
P. O. Box 266
Wentzville, Mo.
Telephone: Fairview 7-6274

New Jersey

*ASSOCIATED BOX CORPORATION
Delanco, New Jersey
Telephone: HO 1-0290

THEODORE R. LEVINE & SONS
86-90 Court Street
Paterson, New Jersey
Telephone: Armory 8-1100

HERBERT A. POST, INC.
Foot Pacific Street
Newark, N. J.
Telephone: Bigelow 8-9430

GEORGE H. SWATEK, INC.
418 Victoria Terrace
Ridgefield, New Jersey
Telephone: Whitney 3-5880

New York

CENTRAL PACKAGING SUPPLY, INC.
Box 705
Syracuse 1, N. Y.
Telephone: HA 2-0171

*KANE PAPER COMPANY
16 West Atlantic Avenue
Baldwin, N. Y.
Telephone: Baldwin 3-8120

H. L. LARGE CORPORATION
315 Roslyn Road
Mineola, N. Y.
Telephone: PI 6-3124

MARSHALL BOXES, INC.
715 Lexington Avenue
Rochester, N. Y.
Telephone: Glenwood 8-7432

HERBERT A. POST, INC.
31-11 20th Road
Long Island City 5, N. Y.
Telephone: YE 2-5000

PRESQUE ISLE PAPER PRODUCTS, INC.
51 Hayes Place
Buffalo, N. Y.
Telephone: TA 2-2100

J. M. WARREN CO.
243 River Street
Troy, New York
Telephone: Ashley 4-5643

Ohio

GASCON PAPER COMPANY
West 110th & Detroit Avenue
Cleveland 2, Ohio
Telephone: Academy 1-1214

Pennsylvania

ASSOCIATED BOX CORPORATION
New Castle, Penna.
Telephone: Oliver 2-6681

PRESQUE ISLE PAPER PRODUCTS, INC.
859 East 8th Street
Erie, Penna.
Telephone: Glendale 6-5351

Texas

GENERAL PACKAGING CORPORATION
Div. Riley & Geehr, Inc.
166 Howell Street
Dallas, Texas
Telephone: RI 8-3440

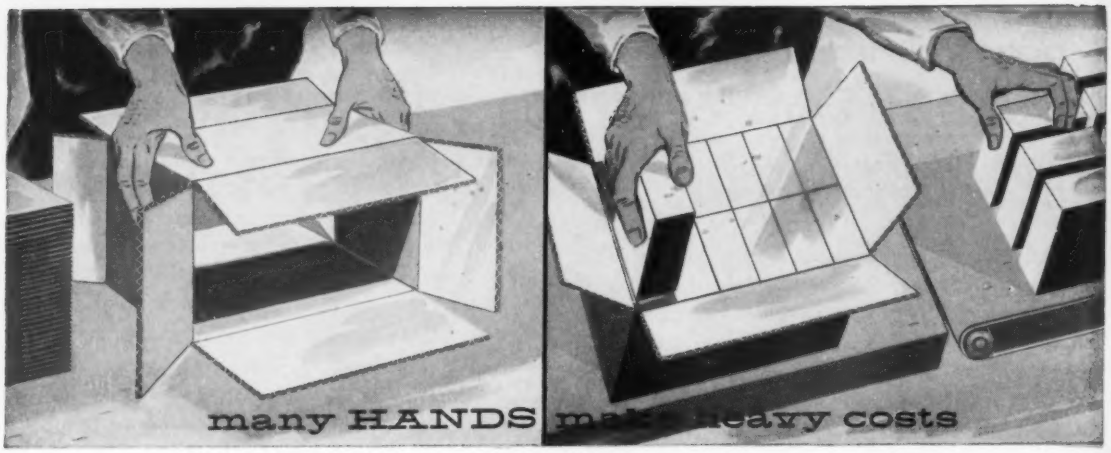
West Virginia

KNOTTS PALLET COMPANY
Box 247
Grafton, W. Va.
Telephone: 2166

Canada

*MACINTYRE WOOD PRODUCTS, LTD.
Smiths Falls
Ontario, Canada
Telephone: 2833686

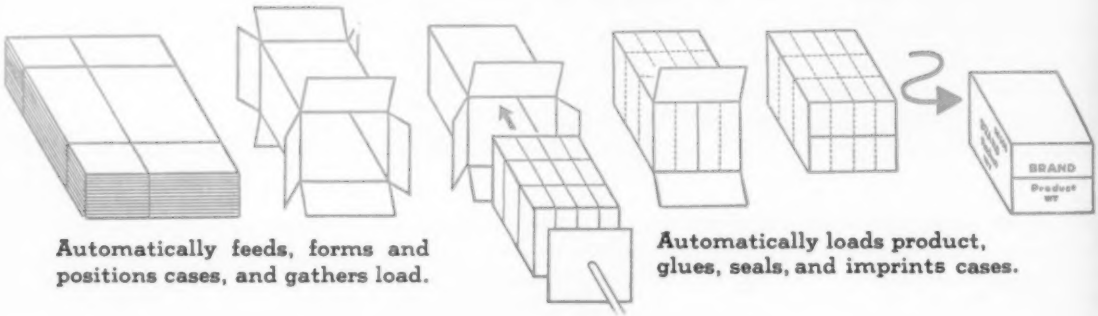
*Also Fabricator



let Packomatic®
T.M. Reg. U. S. Pat. Off.

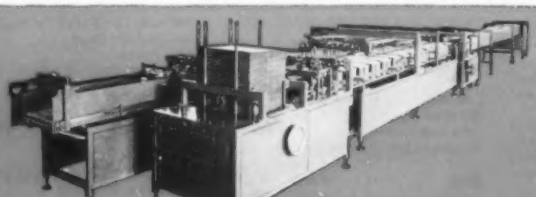
equipment do any or all your casing operations

AUTOMATICALLY



Automatically feeds, forms and positions cases, and gathers load.

Automatically loads product, glues, seals, and imprints cases.



FOR EXAMPLE: Packomatic designed for case-packing of Imperial (5 Qt.) gallon cans of oil for Esso Standard feeds and forms cartons, loads and seals them, automatically — six cans per case, twenty-five cases per minute.

PACKOMATIC DIVISION
TEXTILE MACHINE WORKS
READING, PA.

PACKOMATICS include Case Sealers • Case Opener-Loaders • Case Packer-Gluers • Case Imprinters • Bale Sealers • Automatic Equipment for Shelf Carton Making, Feeding, Filling and Closing • Round Paper Can Mfg. Equip.

For casing round, square, rectangular or free-form packages of virtually any size

You need not be a **big** company to enjoy the economies of Packomatic equipment. If your volume requires even one person to hand-form cases, hand-fill, hand-seal, or hand-imprint them, then a Packomatic machine can be a sound investment. Only a minute or two of attention at infrequent intervals is needed even for a **complete** automated Packomatic **line,** capable of matching the output of a dozen pair of hands. And in addition to reducing direct labor production costs Packomatic can, by utilizing end-opening shipping cases, reduce your paper-board costs up to 25%. And mechanically end loaded cases are stronger because the flaps give added resistance to weight and shock. In addition they stack better because their uniformly flat sides enables keying of pallet loads. Write, wire or phone us for facts on how to reduce your case packing costs.

to make the familiar GLAMOROUS,

J-E Plastics fabricates containers of Celanese acetate

To make everyday items look like special events, package-display them in sparkling acetate.

Acetate containers can be fabricated in a variety of shapes and sizes . . . in long or short runs economically . . . decorated or printed by any process.

Here is a packaging method made-to-order for merchandise that needs a touch of glamor. Celanese Plastics Company, 744 Broad Street, Newark 2, N. J. Celanese®

Containers designed and created by J-E PLASTICS, YONKERS, N.Y.

Celanese Plastics Company is a Division of Celanese Corporation of America.
Canadian Affiliate: Canadian Chemical Company Limited, Montreal, Toronto, Vancouver.
Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 522 Fifth Avenue, New York 36.

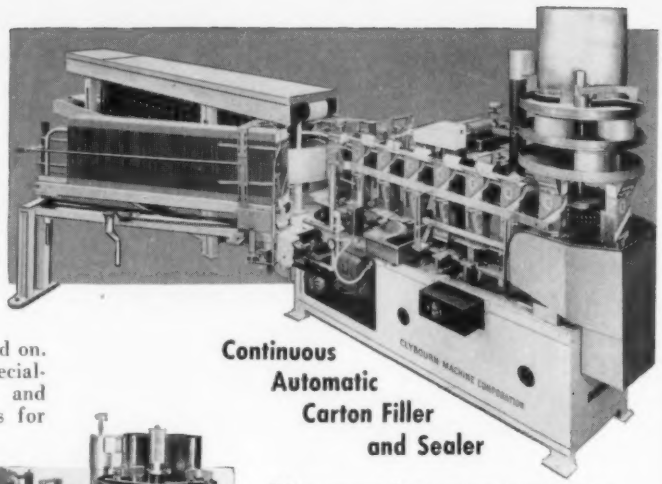
MATERIALS FOR Celanese MODERN PACKAGING

POLYETHYLENE FILM . . . ACETATE FILM AND SHEETING . . . PLASTIC CONTAINERS

Clybourn

Automatic Cartoning Machines

Automatic Cartoning Machines you can depend on. Developed and perfected through years of specialization to provide the utmost dependability and economy on the wide range of applications for which they are recommended.



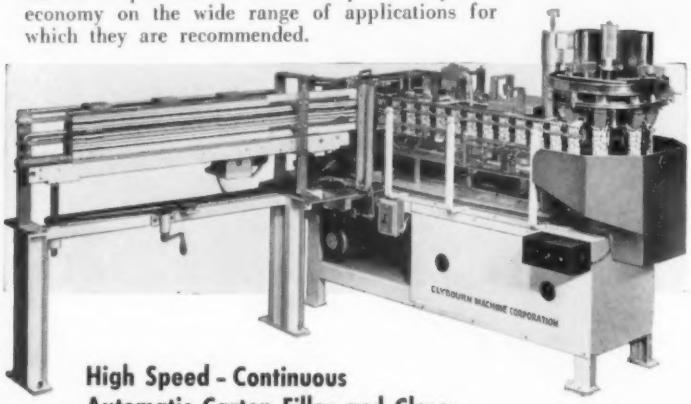
Continuous Automatic Carton Filler and Sealer

Effect tremendous savings in packaging—

- *granular products: rice, whole spices, pet foods.*
- *powders, bagged products, macaroni.*
- *manually fed solid objects and long goods.*

Speed easily adjustable from 30 to 150 cartons per minute. Three-dimension carton size change in less than 30 minutes.

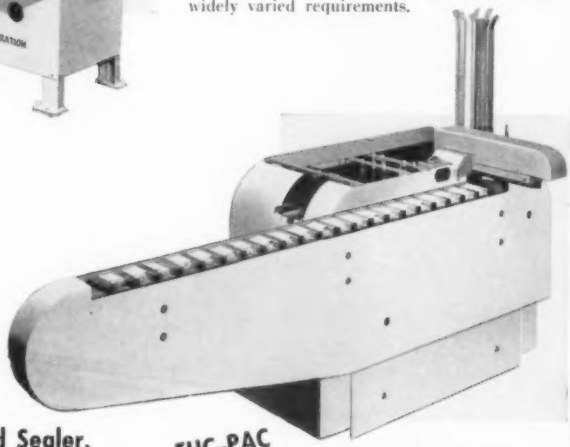
Five standard models, special models and a wide selection of optional features to meet widely varied requirements.



High Speed - Continuous Automatic Carton Filler and Closer

For high speed cartoning of candies, chocolate coated nuts, raisins, shelled nuts, roasted nuts, cough drops and tablets; also soap, detergent and bleach powders, etc.

Outstanding Features: • 200 cartons per minute. • Positive filling, no bridging. • Special, high speed carton opening mechanism. • Carton sizes, up to 2½x3¾x5 inches. • Uses only 6x8 feet floor space.



TUC-PAC Loading and Cartoning Machine

For bagged or solid products. Attendants load contents for one carton into each conveyor pocket. The TUC-PAC automatically forms and loads the carton, tucks the flaps and delivers a fully closed carton.

Furnished for straight, reverse or glue-end cartons.

Net Weighing Automatic Carton Filler and Sealer.

The latest Clybourn CMC Carton Filling and Sealing Machine with four net weighing scales. Automatically cartons every type of free-flowing product not suitable for volumetric filling. *Also available with two scales and for volumetric or auger filling.*

Clybourn know how is at your command in determining the machines and features most advantageous for your cartoning requirements.

Just write or phone your requirements or send for literature. (Phone NEwcastle 1-8000)

CMC

CLYBOURN MACHINE CORPORATION
6479 N. Avondale Ave., Chicago 31, Ill.

NOW
easiest opening closure on earth!

. . . another advantage for 2 STRIP CASE SEALING

LUDLOW'S NEW NON-STAINING *Quick-Strip* REINFORCED SEALING TAPE

2-strip case sealing with Quick-Strip wins friends for your product because it offers important new packaging convenience. Ludlow's reinforced sealing tapes with new non-asphaltic Quick-Strip takes the mess, effort, and delay out of opening cartons — leaves no tar-like smears on knives, counters, clothes, products, or people, as ordinary reinforced tapes do. And it's the lowest-cost non-asphaltic tape on the market!

Quick-Strip is reinforced for tremendous strength, yet peels away readily when you want it to, leaving only a light kraft tissue that slits easily with the slightest touch. Give your cartons the sealing-power and opening-appeal of modern Quick-Strip.

Ludlow

GLASPUN-SNAKETAPE

LUDLOW PAPERS, Dept. PE101, Needham Heights 94, Mass.
A Division of Ludlow Corporation

Send me details and samples of
Ludlow non-asphaltic Quick-Strip reinforced tape.

Name _____

Firm _____

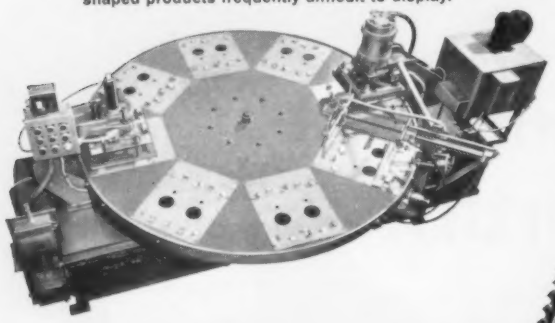
Address _____

City _____ State _____

The most extensive service on printed tapes in the industry, ranging up to seven colors.

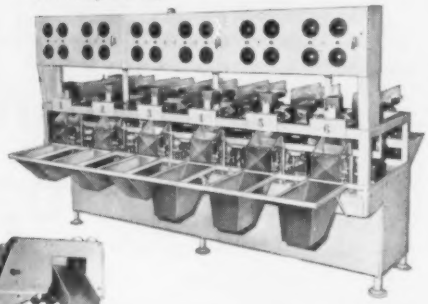
STRETCH-PAK MARK III

Manufactured for Inpak Systems, Inc., the new Mark III stretch packaging machine continues to set new records in production efficiency creating an attractive, pilfer-proof, visible package for odd-shaped products frequently difficult to display.



WEY-MOR MODEL WM-68-R

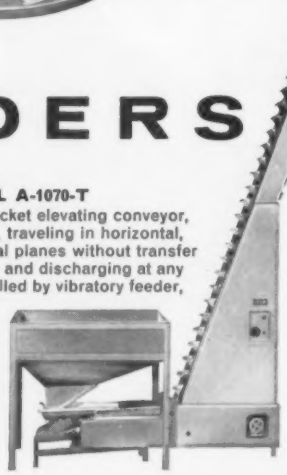
High-speed, specially engineered net weight scales, extremely accurate and smooth in operation, for dependable, trouble-free integration with existing equipment or in a completely automated Lynch system, single or multiple units.



LEADERS LOOK TO L

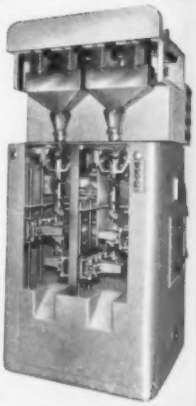
ROBO-LIFT MODEL A-1070-T

Materials-handling bucket elevating conveyor, portable or stationary, traveling in horizontal, inclined and/or vertical planes without transfer of product, picking up and discharging at any number of stations. Filled by vibratory feeder, belt or gravity chute, Robo-Lift handles powders, mixes, pellets, granules or solids smoothly and gently to processing or packaging equipment.



ROBO-WRAP MODEL 200-NW

Forms, fills, seals up to 120 single or double wall pillow packs per minute, using heat seal cellophane, paper, polyethylene, PVA, plastic or laminates. Unique hand-over-hand action pulls down hard-to-handle materials evenly, holds jaws in sealing position longer to assure perfect seal. All main drive components accessible.

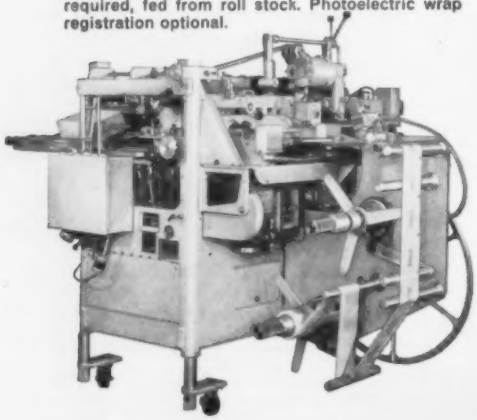


MODE

1961 PMMI SHOW . .

WRAP-O-MATIC MODEL A

Packages fragile and/or irregularly shaped bakery and confectionary items, novelties and industrial products in a neat, sealed package, up to 140 per minute. Accommodates glassine, cellophane, waxed paper, laminates or mounted foil in heat-seal or glue-seal packages. Bottom cards or U-boats as required, fed from roll stock. Photoelectric wrap registration optional.



MODEL SMW-10

Makes, wraps and seals up to 120 ice cream sandwiches per minute. Continuous freezer extrudes ice cream, wafer is added from each side, positioned by indexing wheels. Sandwich is tight-wrapped and heat-sealed in a neat, sanitary package for delivery to hardening room. Economy, high performance.

Lynch
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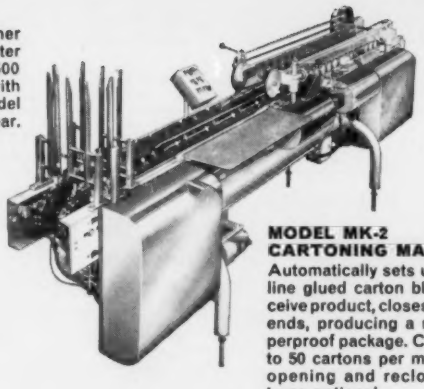
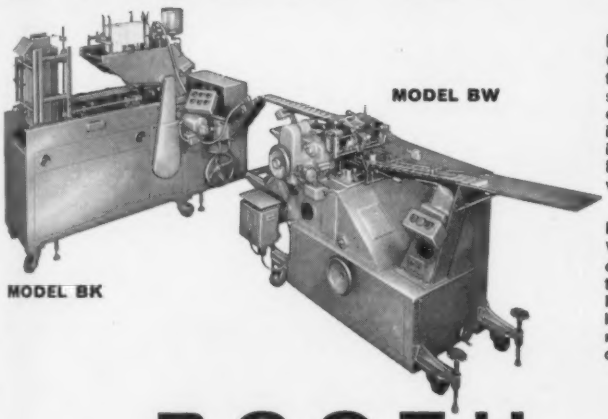
LEADI

MORPAC MODEL TF-KEF-V
Combination print former, wrapper and cartoner designed to package quarter-pound prints of butter and margarine at speeds approximating 2500 pounds per hour. Efficient and dependable with accurate weight control. A new improved model has been developed and will be available this year.



MODEL MK-2 CARTONING MACHINE
Automatically sets up straight line glued carton blank to receive product, closes and seals ends, producing a rigid, tamperproof package. Capacity up to 50 cartons per minute with opening and reclosing features optional.

LYNCH AT THE



MODEL BW

MODEL BK

MORPAC MODEL BK
Collator and cartoner accumulates in various multiples, places in economical wrap-around blank and seals carton. Handles candy bars, hardened ice cream bars and slices, soap tablets and other small items at speeds up to 40 cartons per minute. Loading from one or both sides, one to four layers. One Model BK handles production of two Models BW, when integrated.

MORPAC MODEL BW
Wraps and seals candy bars, ice cream bars and other uniform, rectangular products at speeds up to 150 per minute. Electric eye wrapper registration, harmonic motion product feeder and elevator, side loading twin arbor brackets, torque-limiter, automatic product flow switch for integrated infeed conveyor operation.

. . . BOOTH 425

Lynch automated systems offer *versatile* solutions to almost every packaging problem —be the product free flowing or plastic, jellied or granular, liquid or solid, animal, vegetable or mineral. Lynch engineers have been partners in the packaging progress of scores of the most respected brands in the market. For a complete evaluation and detailed recommendation at any stage of planning (preferably from the start), consult our sales engineers without obligation. Special materials, enclosures, drives, feed and discharge designed to your requirements.

LYNCH CORPORATION
Anderson, Indiana

PACKAGING MACHINERY MANUFACTURERS INSTITUTE PMMI MEMBER

Manufacturing Engineers of automatic processing equipment in the glass, packaging, plastic and other industries.

ATLANTA · CHICAGO · SAN FRANCISCO · ENGLEWOOD, N. J.

LEADERS LOOK TO LYNCH FOR MACHINES THAT PACKAGE ALMOST EVERYTHING

LERMER RIGID PLASTIC CONTAINERS OFFER UNIQUE PACKAGING ADVANTAGES FOR DRUGS, SUNDRIES, FOODS, INDUSTRIAL AND ELECTRONIC PARTS

For the utmost in ease of packaging, visibility, safety and protection, nothing compares with the desirable features of Lermer RIGID plastic containers.

• Printed or decorated up to 4 colors on crystal clear, transparent or opaque colors • Largest line of RIGID plastic containers • 1/5 the weight of glass — greatly reducing ever-increasing shipping and handling costs • Lightweight and shatterproof — with rigid wall protection • Economical—with customer re-use value • Also made of new high density polyethylene — Poly-Opal*. Are chemically inert, stain resistant and have lower permeability to moisture and gases than conventional polyethylene. **Also a complete line of flexible acetate containers.** *T.M.

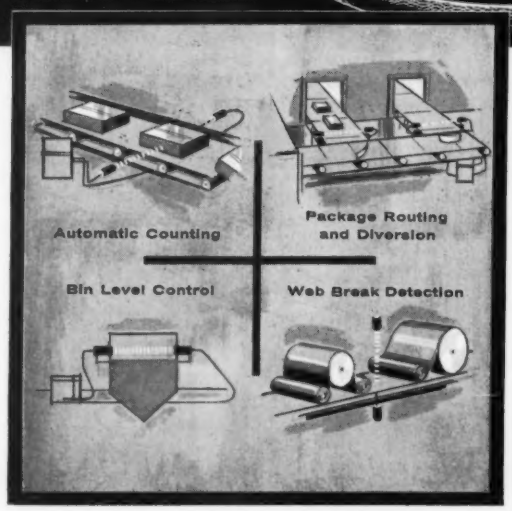
Write for full-color catalog, samples and prices.

LERMER PLASTICS, INC.

502 South Avenue, Garwood, New Jersey

PIONEERS AND SPECIALISTS IN PLASTIC CONTAINERS SINCE 1919

a new dimension in automated controls



SONAC ULTRASONIC,

NON-CONTACT SENSING AND SWITCHING SYSTEM

Before Sonac, sensing and switching control systems which involved breaking a beam of energy were limited by vibration, dust, smoke, steam, air contamination and too much or too little light. Sonac's ultrasonic energy "beam" is completely free of these limitations. The acoustic lens on Sonac sensors can actually be painted without affecting performance. Utilizing high frequency sound also means there are no lamps to burn out. Savings in replacement parts and maintenance time often means Sonac pays for itself. Sonac is completely transistorized, providing you with a rugged, dependable electronic circuit.

These are just a few of Sonac's many uses. Optional equipment includes reflectors for precision beam and positioning control, and coupler assemblies for use with flexible tubing for remote sensor locations. This descriptive booklet will be sent to you on request.

DELAVAN
Manufacturing Company
WEST DES MOINES • IOWA

TODAY'S DEMAND—
A "TIGHT PACKAGE", TRULY REPRESENTATIVE OF THE CONTENTS!

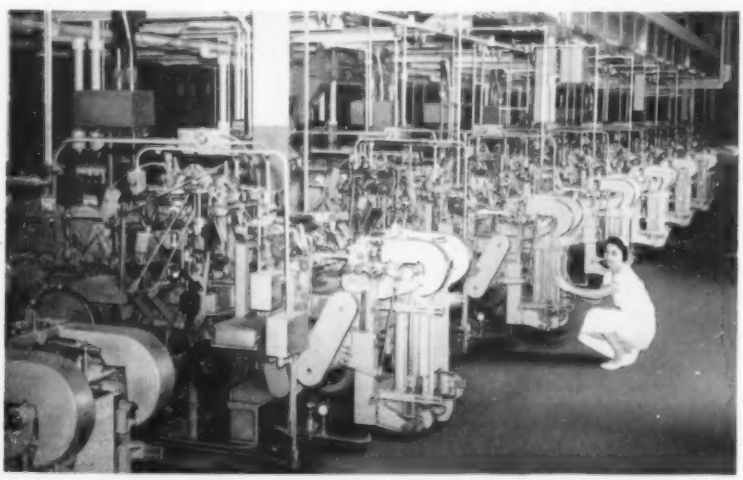
GROWING NATIONAL CONCERN

over packaging design and methods

CALLS FOR POSITIVE ACTION

Imperative for producers to check out present operations in view of recent developments.

It takes something less than a seer to predict that "slack" packaging, especially in foods, faces severe criticism and possibly serious difficulty in the near future. Recent interpretation of what constitutes a satisfactory package from the standpoint of amount of product to size of container makes it clear that very little margin of difference is going to be acceptable. A "tight" package that is truly representative of the product contents is to be the order of the day . . . starting as of right now.



View of production room at Kellog's plant in Memphis, Tennessee, with several small Double Package Maker lines in operation.

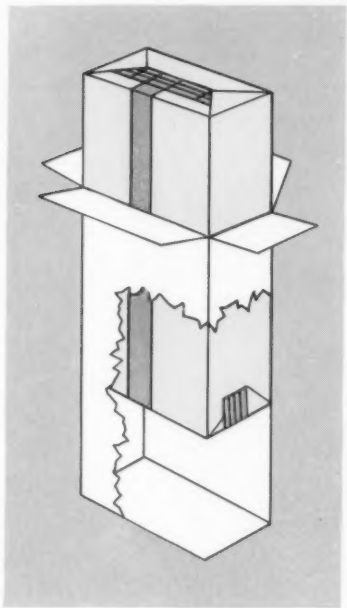
Any package that takes up more space than absolutely necessary is frowned upon by supermarket management. Shelf room in their stores is at a premium and grows more so every day.

In contradiction to these very important realities is the desire on the part of food merchandisers to present a package front that is attractive to the consumer — one that serves as its own salesman.

Fortunately, with many new protective films now available, packaging is more flexible than ever before. There is a wider choice of materials of varying price, in a day when savings in material costs are becoming a very big factor, especially on large volume items. Similarly, there is an ever-growing need for more efficient equipment that will operate at higher speeds to produce the type of con-

tainer that best satisfies the authorities, the producer, the store and the shopper.

All concerned are best served, under these circumstances, by machines such as Pneumatic builds — equipment whose place in the packaging world has been firmly established, but which seems to be actually "made to order" for the situation now facing the producer of retail goods.



Cut away drawing of Pneumatic's Fin Seal package which provides maximum protection with space for complete fill.

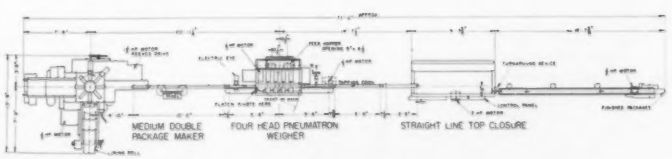
Key to this whole picture is the weighing operation. Automatic precision weighing became available for the first time when Pneumatic developed Pneumatron. This instantaneous pressure method of arriving at net weight, permits endlessly repeated accuracy beyond the most stringent requirements. Extremely sensitive, yet very simple in principle, it is self-compensating for changes in product density or rate of flow.

Installation of Pneumatron weighers at plant of National Biscuit Company at Fairlawn, New Jersey.

A ready-made answer to the problem of slack fill — more acute now than ever before, particularly where a lined carton is involved — is offered through use of a Pneumatic Double Package Maker combination.

With this equipment, a great range of materials and methods may be employed in forming the inner bag, both easily and economically. Any type of heat sealable film, supported or non-supported, may be used as well as materials requiring glue seal including resin, emulsion and hot melt adhesives. A tightly sealed package is made with maximum protection for product and space for *complete* fill. There is no need to waste space. This means there are sizeable savings in material costs. Such a package is above suspicion or criticism of any kind, and with today's multiple choice of materials offers many possibilities for improving the container's merchandising and selling characteristics.

Highly integrated control systems and safeties protect against waste of product or spoilage of containers, further contributing to the end result of "lower cost per container" performance. Pneumatic's constructive and complete packaging service includes examination of your particular product and production characteristics, your merchandising and selling objectives, your competitive situations and other factors bearing on the kind of package you need . . . as well as advice and counsel regarding official requirements and how they may best be met. Write for Pneumatic's NEW ERA PACKAGING folio today . . . it will be sent you free of charge.



Floor plan of typical Pneumatic packaging line.

VISIT OUR BOOTH 334
PMMI Show, Cobo Hall, Detroit, Nov. 7-10

PNEUMATIC SCALE CORPORATION, LTD., 77 Newport Avenue, Quincy, Mass. *New York; Chicago; Dallas; Rochester; Toronto (Delamere & Williams Co., Ltd.); Los Angeles; San Francisco; Seattle (Fred Todt Company); London (Rockwell Pneumatic Scale Ltd.); Paris (O.R.M.A.)*

MILPRINT BRINGS YOUR CUSTOMER ENTHUSIASM TO A BOIL

Past package failures inhibited the bright future once predicted for boil-in-the-pouch foods. Consumer acceptance was lukewarm. But now—Milprint has the answer in KETTLE-REDI pouches!

KETTLE-REDI pouches by Milprint are the first boil-in-pouches that not only won't delaminate even under temperature extremes from sub-zero to boiling, but remain unaffected by most chemical combinations, resist tearing and scuffing, *and* offer high gloss reverse printing that's *locked* in between the laminates. It can't touch food; can't rub or flake off!

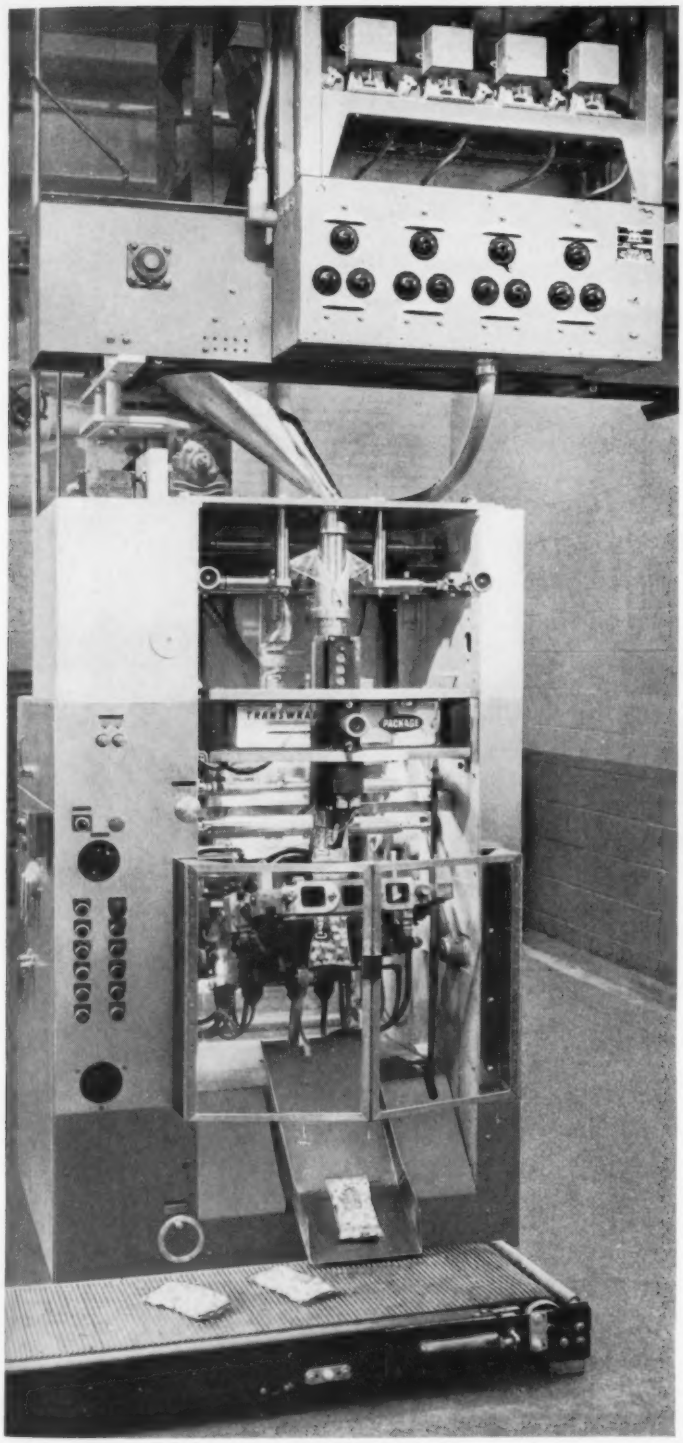
In over 60 years of flexible packaging leadership, Milprint has consistently come up with answers to tough technical problems like this one. One reason: Milprint research and design experts draw on the widest variety of materials available anywhere—and are not obliged to favor any one. This means an "open mind" approach to your packaging problem—no "selling off the shelf," but a custom-built package that meets your specific marketing needs at economical cost. Review your packaging on a regular schedule with Milprint to keep ahead of your competition. Start now—learn how . . .

Milprint, Inc., Milwaukee, Wis., Sales offices and plants across the nation

KETTLE-REDI is a Milprint trademark

MILPRINT PACKAGING GIVES YOUR PRODUCT **MARKETING POWER**

**Milprint was given two merit achievement awards for* KETTLE-REDI *pouches in 1960, by National Flexible Packaging Assn.*



TRANSWRAP S-750 GIVES NECCO HIGH-SPEED AUTOMATIC PACKAGING

On their Canada Mint packaging operation, New England Confectionery Co. now automatically forms, fills and seals 9-oz. polyethylene bags on a Package Transwrap S-750. Sustained production rate for the 4⅝" x 8½" bags is 60 a minute.

NECCO gets high-speed operation and flexibility of bag sizes and materials with its Transwrap. The machine runs virtually unattended, and the net weight scale feed maintains extremely close accuracy. Their 6-oz. and 8-oz. mint packages are planned for this unit in the near future.

See the S-750 Transwrap—with net weight scales and floor level conveyors—operating at the PMMI Show in Detroit, Package Machinery's Booths 526-528.

The Package Transwrap S-750 offers these cost-cutting features that mean speed, flexibility and efficiency to any packaging operation:

- Wide size range—bags 3" to 15" long, 2" to 8½" wide.
- Up to 75 bags a minute with a single tube; easy speed adjustment.
- Handles a wide variety of plastic and heat-sealable films.
- Rapid film and size change-overs.
- Smooth, straight pull on material, even at high speeds, by spring-counterbalanced, crank-operated drawbar.
- Improved paper feed operates faster, eliminates film distortion.
- Tight, positive impulse sealing of ends and longitudinal seam.

In addition to Canada Mints, NECCO plans to use the Transwrap to package other candy products in both polyethylene and cellophane bags.

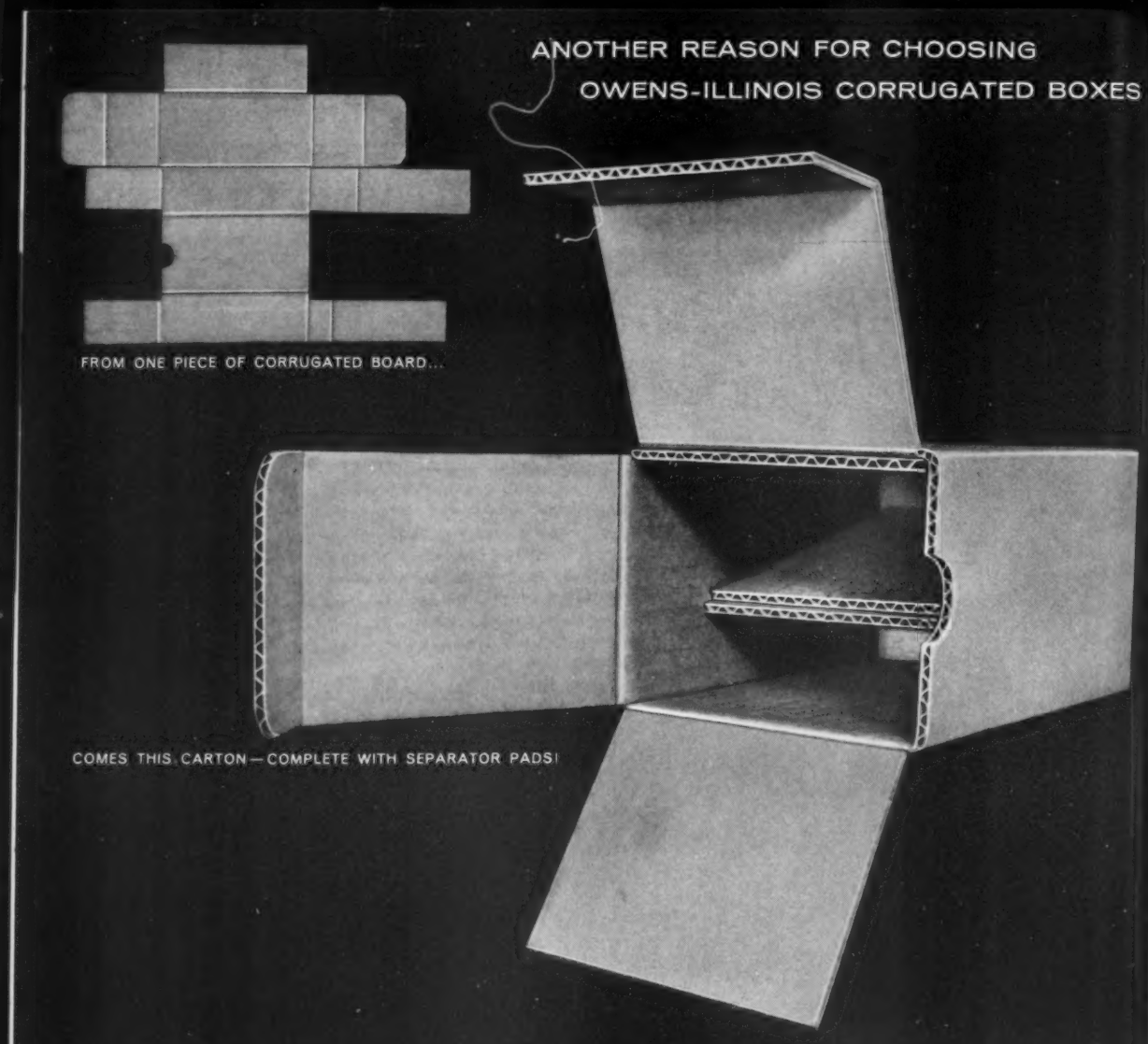
PACKAGING IS PART OF YOUR PROFIT PICTURE

PACKAGE MACHINERY COMPANY, EAST LONGMEADOW, MASS.

NEW YORK • PHILADELPHIA • ATLANTA • BOSTON • CLEVELAND • CHICAGO • KANSAS CITY
DALLAS • HOUSTON • LOS ANGELES • SAN FRANCISCO • SEATTLE • TORONTO • MEXICO CITY

PACKAGE

PMMI


ANOTHER REASON FOR CHOOSING
OWENS-ILLINOIS CORRUGATED BOXES
FROM ONE PIECE OF CORRUGATED BOARD...
COMES THIS CARTON—COMPLETE WITH SEPARATOR PADS!

MR. STRONGBOX

LOCALIZED SERVICE FROM:

Atlanta, Ga.	Long Island City, N. Y.
Aurora, Ind.	Los Angeles, Calif.*
Bradford, Pa.	Madison, Ill.
Bristol, Pa.	Memphis, Tenn.
Chicago, Ill.	Mercedes, Texas
Dallas, Texas	Miami, Fla.
Detroit, Mich.	Milwaukee, Wis.
Flint, Mich.	Minneapolis, Minn.
Jacksonville, Fla.	Newark, N. J.
Kansas City, Mo.	Oakland, Calif.*

Salisbury, N. C.

*These plants are operated by National Container Corporation of California, subsidiary of Owens-Illinois.

How Owens-Illinois corrugated boxes cut handling costs $50,000

Design engineers at Owens-Illinois have developed a new corrugated box which saved $50,000 in handling costs the first year for a manufacturer of electrical equipment. The entire box—separator pads included—is made from one piece of corrugated board.

This customer formerly used a multi-piece box. Our single-piece construction simplified inventory, speeded up box assembly and packing which resulted in the above savings. We may be able to do the same for you.

FOREST PRODUCTS DIVISION
FORMERLY NATIONAL CONTAINER

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

For more information circle No. 227 on Reader Service Card

Circle No. 228 on Card ▶

See how **Scotch® Brand** tape

turns a package.....

"SCOTCH" IS A REGISTERED TRADEMARK OF 3M CO., ST. PAUL 6, MINN.

into a fresh pack...this fast!

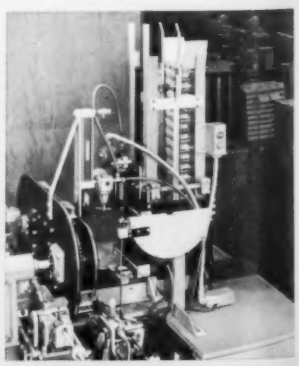
AS FAST AS YOU TURNED THIS PAGE — in just two seconds — a thin gold band of "SCOTCH" Brand Tape seals in freshness on another 10-pack of Corina Larks. The pressure-sensitive seal on this new package keeps cigars factory-fresh up to **six** times longer than conventional cigar packages.

"SCOTCH" Brand metalized gold polyester tape No. 850, applied automatically to 30 such Ever-Fresh packs a minute, covers the closure and hinges of the clear plastic container. The attractive gold tape upgrades package appearance and adds appeal while serving as a highly effective moisture-vapor barrier.

How might a decorative, moisture-resistant tape closure help you design greater protection . . . greater eye appeal into your packages? For information about methods and equipment, call your 3M Tape Representative, or write: 3M Co., 900 Bush Ave., St. Paul 6, Minn., Dept. IBG-91.

. . .

This unique applicator, designed and built for the Corina Division of General Cigar Company, automatically seals and applies an easy-opening plastic tab to 30 packs of cigars per minute.



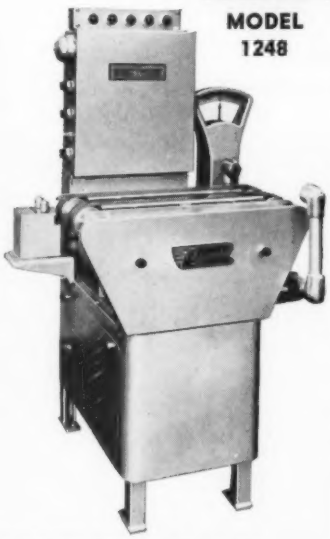
Scotch Brand
tapes for packaging

Industrial Tape Division 3M COMPANY

SELECTROL® Automatic Checkweighers

These machines fit into your production line . . . weigh in motion . . . eliminate manual spot checking

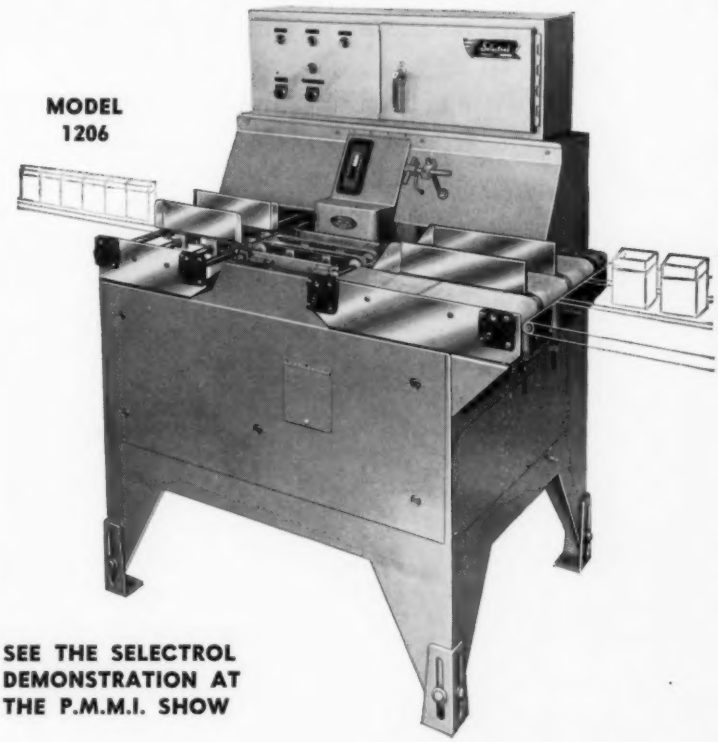
NEW!
MODEL 1248



10 TO 50 LBS. CAPACITY

New compact checkweigher, Model 1248, is offered *without* intake conveyor and reject section. Weighs cases and cartons from 10 to 50 lbs. at speeds of 25 units per minute nominal, and up to 40 per minute depending on package size and accuracy requirements. Accuracy is 1/10 of one percent or better. Write for details.

MODEL 1206

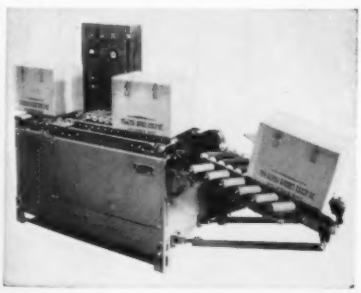


SEE THE SELECTROL DEMONSTRATION AT THE P.M.M.I. SHOW

Selectrol Model 1206 automatically weighs, classifies and sorts packages to 5 lbs. at speeds up to 120 units per minute, depending on weight and size of object. Rejection accuracy is 2/10 of one percent of the commodity weight at maximum speed. Tolerance limits are adjustable to user's requirements.

With a constant speed, no stop motion, Selectrol segregates each package according to predetermined tolerances for overweights and underweights. Selectrol sorts open or closed packages; permits trimming of rejects. Signal lights and counters are available as optional equipment.

Selectrols are made by Exact Weight, a leading manufacturer of industrial scales for more than 45 years with experience gained through hundreds of checkweighing installations. For complete details on Selectrol Model 1206, write for Bulletin 3377.



CASE AND BAG CHECKWEIGHER

Model 1250 Selectrol is designed for checking bags, cartons or cases from 20 to 100 pounds at speeds up to 30 items per minute. Rejection accuracy is 1/10 of one percent at maximum speed. Model 1250 can be supplied with or without rejection equipment. Write for Bulletin 3376.

Exact Weight SCALES

THE EXACT WEIGHT SCALE CO.
912 W. FIFTH AVE., COLUMBUS 8, OHIO
In Canada: 5 Six Points Road, Toronto 18, Ont.
Sales and Service Coast to Coast

Find us in your local 'Yellow Pages'

Who developed

a cellophane with greater transparency than any other?

a cellophane that heat-seals at lower temperatures than any other?

a cellophane that cuts meat wrapping costs up to 10%?

a cellophane that keeps potato chips and other high oil-content foods saleable 50% longer?

a cellophane that withstands sub-zero temperatures for months without shattering?

a cellophane that is completely impervious to grease?

a cellophane that gives tough, tight wraps for the largest, boniest cuts of meat?

a cellophane that keeps cupcakes, pound cakes and jelly rolls fresh 12 days instead of 7?

a cellophane that stays clear and sparkling under constant refrigeration?

a cellophane that assures maximum resistance to cockling?

a cellophane that combines greater economy, stability and durability than any other?

Olin did.

Strong claims? Of course, but each is backed by exhaustive laboratory tests or actual customer reports.

And we're working constantly to develop other new cellophanes to give your product maximum protection and sales appeal.

If you have a cellophane packaging problem, see your Olin representative or converter. We probably have just the cellophane to meet your specific needs. If not, chances are, we're already working on it.

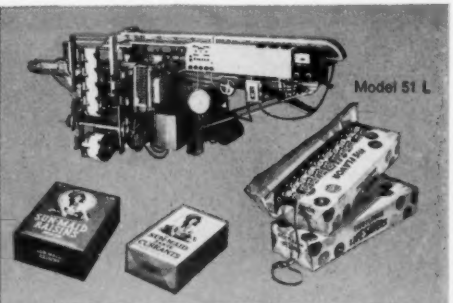
PACKAGING DIVISION Olin
FILM OPERATIONS, 460 PARK AVE., NEW YORK, N.Y.

BATTLE CREEK'S MODEL 51 SERIES PROVIDES

SPEED WHEN SPEED COUNTS!

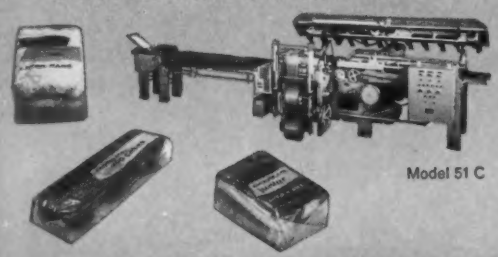
Here are six Model 51 machines "tailored" to solve individual packaging problems created by the inherent nature of the product, the high speed demands of prior processing equipment and the need for impelling product sales appeal. One of these models is best suited to precision package your product neatly, tightly in heat-sealing cellophane, laminated papers, wax-coated papers or heat-sealing foils. Each model has the same universal "Continuous Flow" characteristics which offer dramatic labor saving advantages and unique operating economies. All are ideal for long production runs of products within these size ranges: 3¼"—5½" long or 6"—11" long, 2½"—4¼" wide and ¾"—2¼" high. Inquire today about the Model 51 series and discover what Battle Creek Packaging Machines can do for you.

eliminate frustrating
production bottlenecks with
overwraps of 120 to 240 per minute

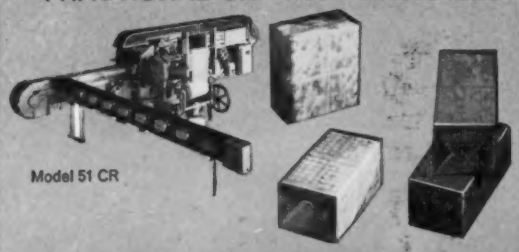


GENERAL RECTANGULAR APPLICATIONS

SOFT IRREGULAR PRODUCTS



FRACTIONAL CRACKER PACKAGES

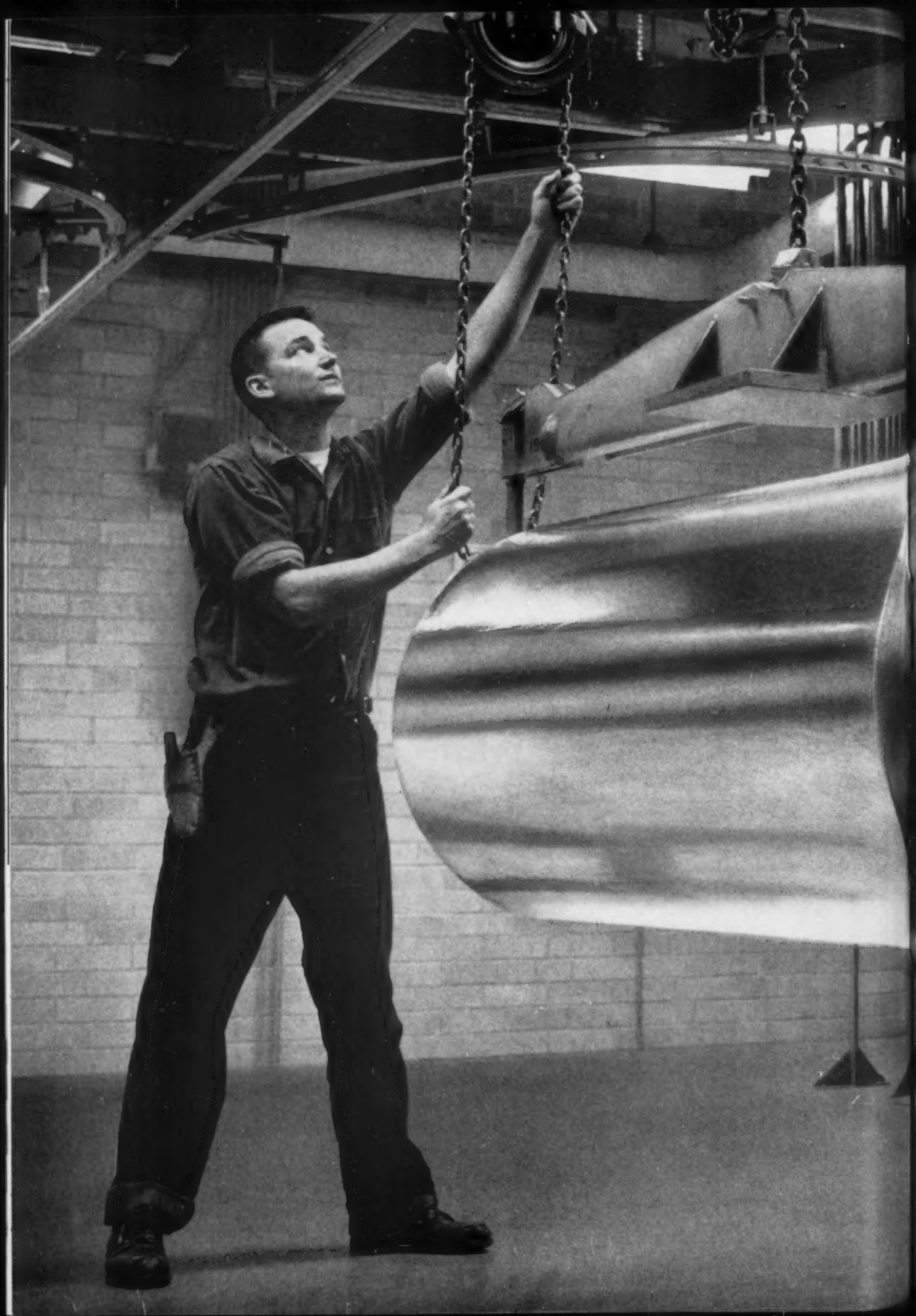


Continuous Flow® PACKAGING

BATTLE CREEK *packaging machines, inc.*, BATTLE CREEK, MICH

For more information circle No. 231 on Reader Service Card

For next page circle No. 232 on Card ►



Du Pont cellophane makes news . . .

In one year, 19 new cellophanes for new packaging needs!

Still more cellophanes from Du Pont research—to meet new, ever-changing packaging needs. Today, packagers can choose from over 100 Du Pont cellophanes! Each one is sparkling-clear. Each one prints beautifully. Each one gives maximum efficiency. Yet—there are important differences. WVT rates vary. So does durability. Some seal at temperatures 50° F. less than previously. Some are polymer-coated, extra-tough. Some are ideal substrates.

The point is: Du Pont cellophane is many, many films. Different coatings give different properties, make each cellophane a different film. Right now, there are over 100. And we have many more in the works.

Have you checked lately? There's a good chance you'll find a special Du Pont cellophane that will give you better, more protective packaging at lower cost. Call your Du Pont Representative or Authorized Converter. Du Pont Co., Film Department, Wilmington 98, Delaware.

DU PONT

DU PONT cellophane

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

THE RIGHT ADHESIVE FOR PAPER CONVERTING

(and how the Arabol man helps you select it)

1. LAMINATIONS. Whether it's paper to synthetics, metal foil to paper, paper to board, or whatever combination — laminating is *the* growth business. And laminating means bonding with adhesives for strength and other characteristics. The *right* adhesive is needed to seize two materials with dissimilar surfaces and hold them together as one substance . . permanently and economically. Your Arabol man knows laminations. Let his knowledge help you improve your operations.

2. LABELING. Labels on glass, labels on wood, labels on metal, labels on paper and paperboard . . . labels on most anything! Perhaps you want the label to be as permanent as the container itself; or maybe you want the label easily detachable to permit re-use of the package or confidential treatment of label data. In every case, the service of the label is controlled by the selection of the adhesive. For the most effective use of your labels, at maximum economy, call in the Arabol man to select the *best* adhesive.

3. PRODUCT FORMING. From paper cups to coffee bags, soda straws to storage cartons, window envelopes to paper cans . . . paper converting needs adhesives application. As new items appear, or improved versions of conventional lines win added acceptance, it becomes important to choose the most efficient, most economical adhesive. In determining the one adhesive formulation that is best for your specific needs—your Arabol man can aid you.

4. PACKAGING. Achieve maximum utility in closing and sealing your cases and cartons — for immediate delivery and dispensing, or for extended storage with better protection for contents against contamination, damage and pilferage — with the correct adhesive designed for your requirements in this application. The unexcelled knowledge of your Arabol man covers case sealing as thoroughly as all other adhesive applications. Let him work with you.

INCREASE YOUR ADHESIVE KNOW-HOW . . . Read our informative quarterly bulletin, the Arabol Adhesive Advisor, filled with facts, news and views on the adhesives industry. It offers valuable time and money-saving tips, culled from Arabol's 76 years of adhesive experience. Write on your letterhead to: Editor, Arabol Adhesive Advisor, 110 East 42nd Street, New York 17, N. Y. There will be no charge, of course.

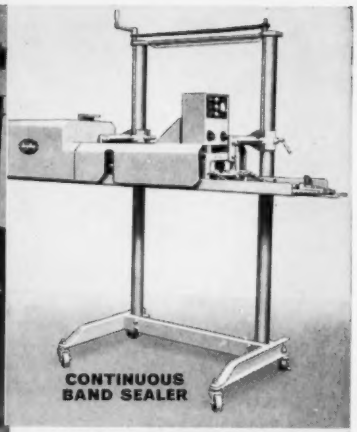
ARABOL ADHESIVES

14 PLANTS AND WAREHOUSES TO SERVE YOU ON A LOCAL BASIS

THE ARABOL MFG. CO., 110 EAST 42ND STREET, NEW YORK 17, N.Y. • CHICAGO • SAN FRANCISCO
LOS ANGELES • ST. LOUIS • MARIETTA, GA. • DELAWARE, O. • PORTLAND, ORE. • ITASCA AND
McALLEN, TEX. • PHILADELPHIA • BOSTON • DENVER • TAMPA • LONDON, ENG.

GLUE SEALERS

BAG MAKERS


CONTINUOUS BAND SEALER

Which Doughboy Package System do you need?

Shown here are some of the examples of packaging, sealing, labeling and coding systems developed by Doughboy engineers to meet specific problems. One of the systems shown here may be just what you're looking for.

Chances are, however, that your problems are different. And this is where Doughboy really excels. Doughboy has designed packaging systems for literally hundreds of manufacturers. Doughboy systems are right now packaging such diverse items as hard-goods, soft-goods, foods, even livestock feeds and fertilizers.

Films used for these specialized systems include polyethylene, pliofilm, vinyls, cellophane, glassine, coated papers, scrimback, laminates . . . you name it, we've sealed it.

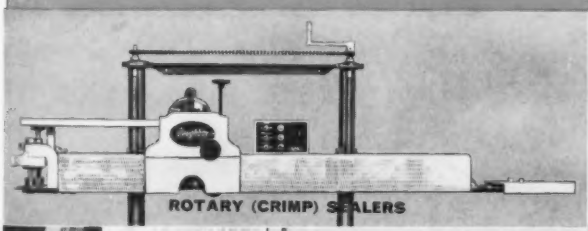
So if your problem is different, call Doughboy. (If your problem is run-of-the-mill, call us, too! We can save you big money!)

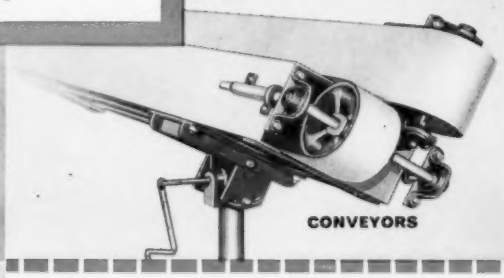
MECHANICAL DIVISION • DOUGHBOY INDUSTRIES, INC., NEW RICHMOND, WISCONSIN

Manufacturers of heat sealing machines and conveyors

POWER HAND SEALERS

BAG TOP LABELERS


ROTARY (CRIMP) SEALERS


CONVEYORS

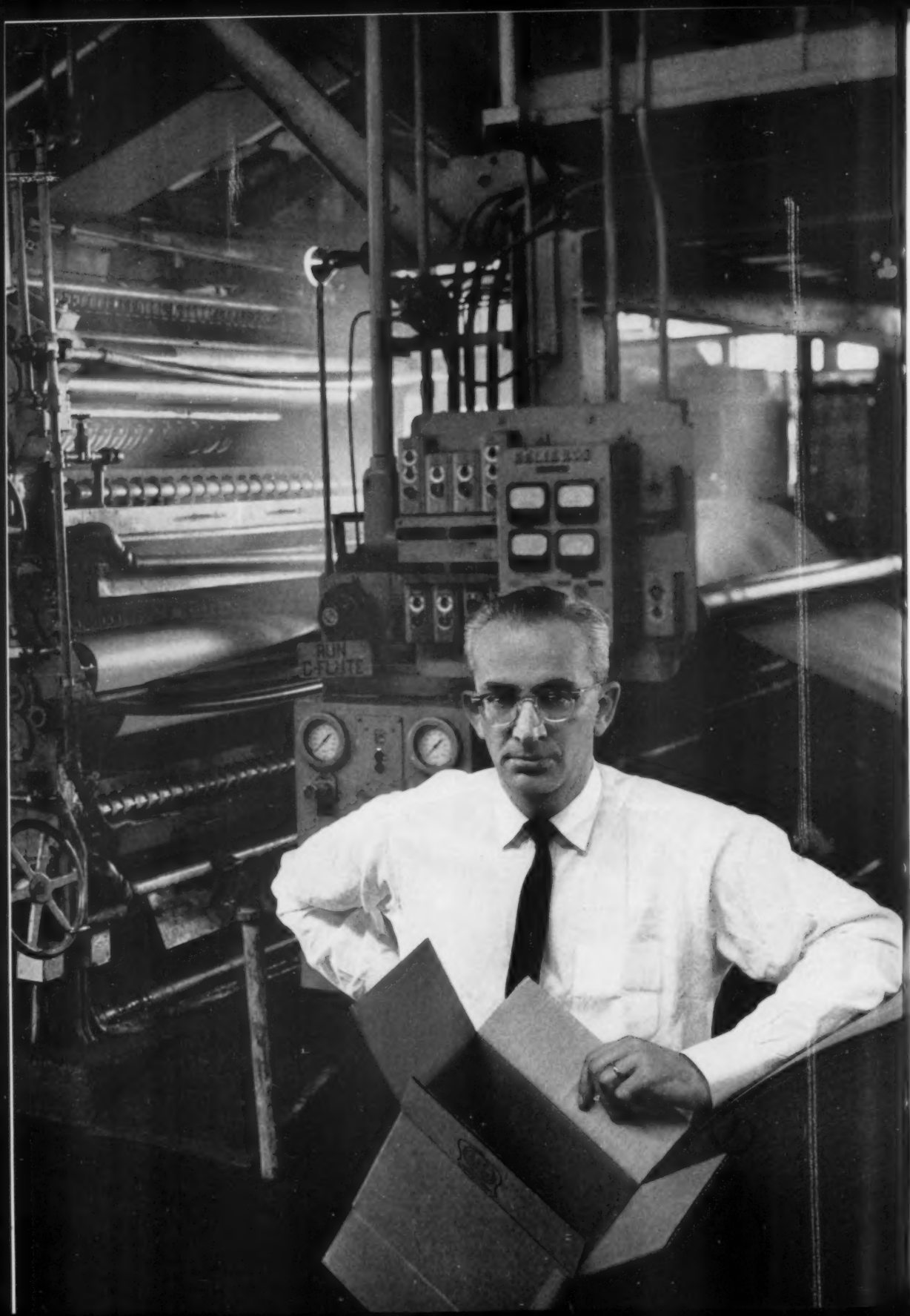
UNIPAK VERTICAL SEALERS

SEE US AT BOOTH 737

PMMI SHOW

NOV. 7 • 8 • 9 • 10

DETROIT, MICH.


RUN
C-FLUTE

With him, every case is special

Over a thousand companies have put the construction of their corrugated boxes in Metin Hamarat's hands.

METIN HAMARAT is manager of all Union-Camp corrugated box plants. The shipping containers these plants produce are used by virtually *every* manufacturing industry in the country.

There's a good reason for this wide acceptance. Metin, you see, is a perfectionist. Although making corrugated boxes is a mass production business, he refuses to compromise with quality.

Why this passion for precision when most corrugated boxes look alike? The answer lies in the myriad of unapparent features that contribute to the performance or quality in a corrugated box.

For instance, consider the combining of the sheet itself—the corrugated "sandwich". Even the *quantity* of adhesive used in this operation is critical. Skimp, even slightly, and the sheet might peel apart later. Use too much adhesive and you often get an unsightly washboard effect that can spoil the appearance of your printing. And, as you might expect, Metin and his pressmen take particular pride in corrugated box printing. So much so, that they frequently *sign* their work!

Scoring is critical, too. Just being *straight* isn't enough. Too deep a score, as Metin points out, weakens the board and makes it prone to tear. Too narrow, or shallow, will make the box hard to fold—cause foul-ups on the packaging production line. And, of course, costly downtime.

And, there's *slotting*—the knife-cuts that form the top and bottom box flaps. Metin is meticulous here, as well. If you've ever tried to close and seal a carton whose flaps didn't meet perfectly or exactly parallel to each other, you'll understand why.

Attention to these and other key steps in the manufacture of Union-Camp corrugated boxes are the reasons they pay off in performance on your packaging line. That's why with Metin Hamarat, every case is special.

His craftsmanship manifests itself in the quality of products produced in *all* Union-Camp box plants. It typifies the thoroughness of Union-Camp's packaging service. This service covers corrugated box development and design. It includes specifications control, art and merchandising counsel and plant surveys of your materials handling operation.

We'll be glad to tell you more about this comprehensive corrugated service and what it could mean to you in packaging efficiency. A note on your letterhead will bring a prompt reply. Write us today.

UNION-CAMP®
CORRUGATED BOXES

Union Bag-Camp Paper Corporation • 233 Broadway, N. Y. 7, N. Y.

Plants:

*Dedham, Mass.: Allied Container Corp., Route 128, Allied Drive
Trenton, New Jersey; 1400 E. State St.
†Washington, Penna.; P. O. Box 285
†Cleveland, Ohio; 10200 Miles Ave.
†Sharonville, Ohio; P. O. Box 86
Chicago, Ill.; 4545 West Palmer
†Benton Harbor, Mich.; 11th St. & Britain Ave.
†Monroe, Mich.; 1109 East Elm Ave.
†Eaton Rapids, Mich.; P. O. Box 8
*Baltimore, Md.; Eastern Box Co.; Wagner's Point
Jamestown, N. C.; 3704 Point Pleasant Rd.
Spartanburg, S. C.; P. O. Box 1965
Savannah, Georgia; P. O. Box 570
Lakeland, Florida; P. O. Box 454

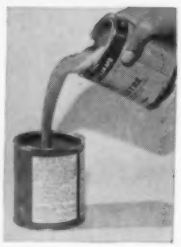
*Subsidiary Companies †River Raisin Division

U.S.I. POLYETHYLENE NEWS

A series of advertisements for plastics and packaging executives by the makers of PETROTHENE® polyethylene resins

OCTOBER, 1961 — U. S. Industrial Chemicals Co., Division of National Distillers and Chemical Corporation — 99 Park Ave., N. Y. 16, N. Y.

Packaging Notes



Polyethylene pour spout comes in sizes to fit quart and gallon paint cans. Snaps on and off in seconds and is reusable. Keeps paint out of lid groove. Puts an end to messy dripping. Available imprinted with advertising message.

Square-bottom and 3-D style polyethylene bags are being produced by a N. Y. converter from black and natural film in "any size . . . all gauges." A

3-D style polyethylene bag can stand unsupported for easy filling.

specialty is large, tailored shrouds and covers for domestic and military protective packaging. The largest to date: 450" x 96" x 168". Electronic seals are said to exceed strength of base material.

Bottom-seal attachment is now available for side weld bag machines made by a leading company. With it, bottom-

seal polyethylene bags 8" wide x 16" long can be produced at a rate of 200 per minute. According to the manufacturer, production speeds on large bags are also excellent, since bags up to 65" long may be made with a single stroke.

Tote barrel of molded polyethylene construction has sturdy wire handles and masonite reinforced bottom. It's dent-proof, water-proof and rust-proof, yet light in weight — an ideal multi-purpose container. Available in various sizes, including 25 and 45 gallons.

Polyethylene Now Slicing Off Sizable Share of Breadwrap Market

Savings Potential Is Prime Mover, But Protective Qualities and Film Clarity Are Factors

Currently, some ten million loaves of bread per day are being wrapped in polyethylene film in the U.S.A. And the figure is growing at an increased rate, according to U.S.I. marketing specialists. A major west coast bakery chain, for example, recently installed 150 machines for handling polyethylene overwraps.

Lag Turns to Spurt

Volume use of polyethylene by bakeries began materializing in 1959, when about three million pounds of film went into the market. Last year consumption increased to between six and seven million pounds. *This year, it's expected to be over 20 million pounds,* or over 1.7 billion loaves of wrapped bread.

Year's output of bread wrapped in polyethylene film by America's bakers is expected to total more than 1.7 billion loaves.

Savings: $15,000 Per Year Per Machine

More and more bakeries, apparently, have come to recognize the savings afforded by polyethylene over competitive materials. Cellophane, for example, costs 62¢/lb.; has a yield of 25,000 sq. in./lb. at .76 mil. Polyethylene, now down to 53½¢/lb., has a yield of 25,700 sq. in./lb. at 1.15 mil.

On a yearly basis, the difference becomes substantial. To illustrate: One wrapping machine operating at a 50 loaf/min. rate, 8 hrs./day, 250 days/year would put out 6 million loaves. Thus a savings of $15,000 in material costs alone can be achieved.

Technical Difficulties Licked

Too, the wrapping and sealing problems which beset early users have now been overcome by better equipment, proper operator training and end labels with special adhesives. The availability of stiffer films with improved gauge uniformity, and cast film with greater clarity and gloss also contributed to widespread acceptance.

Sales Up, Returns Down

Nor can customer approval be overlooked. Bakeries almost invariably report increased sales, reduced returns after switching to polyethylene breadwraps. Consumers react to the soft, warm, "fresher" feeling imparted by the polyethylene and appreciate its keeping qualities.

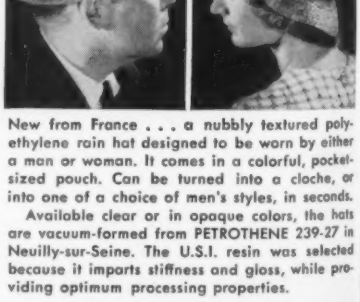
Bakers To See Polyethylene Packaging Demonstrations

Visitors to the 1961 Baking Industry Exposition at Atlantic City, N. J., October 7-12, will have the chance to observe polyethylene packaging equipment in action. At Booth 858, five or six different types of M·A Packaging machines will be displayed, forming polyethylene bags around rolls, loaves of bread, and other baked goods. Other bread wrapping equipment will be exhibited at the show.

Bakers Review Packaged in Polyethylene

More than 1000 copies of the latest issue of *Bakers Review* magazine will be packaged in transparent polyethylene film and given away at the 1961 Baking Industry Exposition. M·A Packaging System equipment will be employed. Many publications are currently using polyethylene bags for mailing.

His 'n Hers



New from France . . . a nubbly textured polyethylene rain hat designed to be worn by either a man or woman. It comes in a colorful, pocket-sized pouch. Can be turned into a cloche, or into one of a choice of men's styles, in seconds.

Available clear or in opaque colors, the hats are vacuum-formed from PETROTHENE 239-27 in Neuilly-sur-Seine. The U.S.I. resin was selected because it imparts stiffness and gloss, while providing optimum processing properties.

SILICONE NEWS from Dow Corning

Silicones help satisfy

Syl-off® coatings for paper promote perfect parting

Pleased with her purchases? No doubt about it. In an instant, tasty rolls —after dinner sweets, too—easily and completely removed from the package. No sticking, no waste, no mess.

You can build consumer satisfaction in your packages simply by specifying papers coated with Syl-off silicone release coatings.

Here's real release! Repeated and continuous testing against the most stubborn stickers—including many industrial products—have established the ability of Syl-off coatings to give 'em the slip with amazing ease. Even the tackiest products "depackage" cleanly, completely.

Syl-off coatings do not migrate or contaminate. Food grade Syl-off coatings may be used in contact with food products in complete compliance with provisions of the Food Additives Amendment of 1958.

More ways you benefit. As backing for pressure-sensitive labels, decals and decorative trim, papers coated with Syl-off peel free quickly, cleanly from even the most tenacious adhesive mass . . . eliminate tearing during removal of backing . . . have no effect on adhesion.

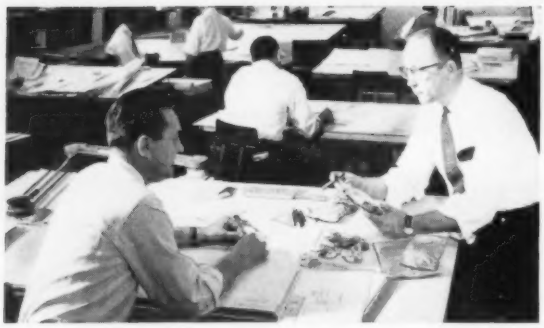
Cut costs by reducing time and product waste. Make your product easier and more pleasant to use. Let Syl-off silicone coatings help you achieve consumer satisfaction. Contact any of the approved sources for papers or containers with Syl-off coatings. They'll gladly work with you in selecting the product that best meets your needs.

For detailed information plus a list of sources of Syl-off coated papers, write Dow Corning Corporation, Dept. 9022, Midland, Michigan.

first in silicones

Dow Corning

For more information circle No. 236 on Reader Service Card



After an automatic weighing and packaging requirement is properly analyzed, Triangle Production Engineering details the equipment needed. Actually, this is a rather complex business of fitting proven automatic weighing and packaging methods into the customer's existing plant operations. The goal is the simplest, most efficient machine possible—one the customer can depend on, and that Triangle can guarantee.

Would your packaging machinery let you compete with Manischewitz?

It would *if* the machine builder was able to fit proven automatic weighing and packaging methods to your needs as well as Triangle did for The B. Manischewitz Co., Newark, New Jersey.

Whether you're putting crackers into cartons, or not, your packaging machinery can affect your competitive position. That's why Triangle's specialization since 1923 in automatic weighing and packaging is worthy of your consideration.

In the case of Manischewitz, the proven Triangle Elec-Tri-Pak automatic weighing system was combined with other well-established methods of packaging. Triangle Production Engineering detailed the combination so it would fit directly into Manischewitz operations. As a result, the machine was simple and efficient. Crackers went into cartons gently, and fast enough to help make Manischewitz an effective competitor.

The sensitivity of the five Elec-Tri-Paks and their new auxiliary, double-stage vibratory feed system gives Manischewitz unusual accuracy as well as speed. Yet the entire automatic weighing installation is simple and dependable—no complicated adjustments . . . just as easy to maintain as it is to clean.

Like so many other users of Triangle machines, Manischewitz already knows what we want to show you. Why not write or call for our free brochure, "A Story About People, Packaging and Profit." Request also our folder on Triangle automatic weighing. Both tell why you can depend on Triangle.

F-15-AL

The B. Manischewitz Co., Newark, New Jersey, has used Triangle Elec-Tri-Paks for fully automatic weighing for years. Now, they have installed this new, fully automatic Triangle weighing and packaging system to put crackers into cartons.

38 YEARS

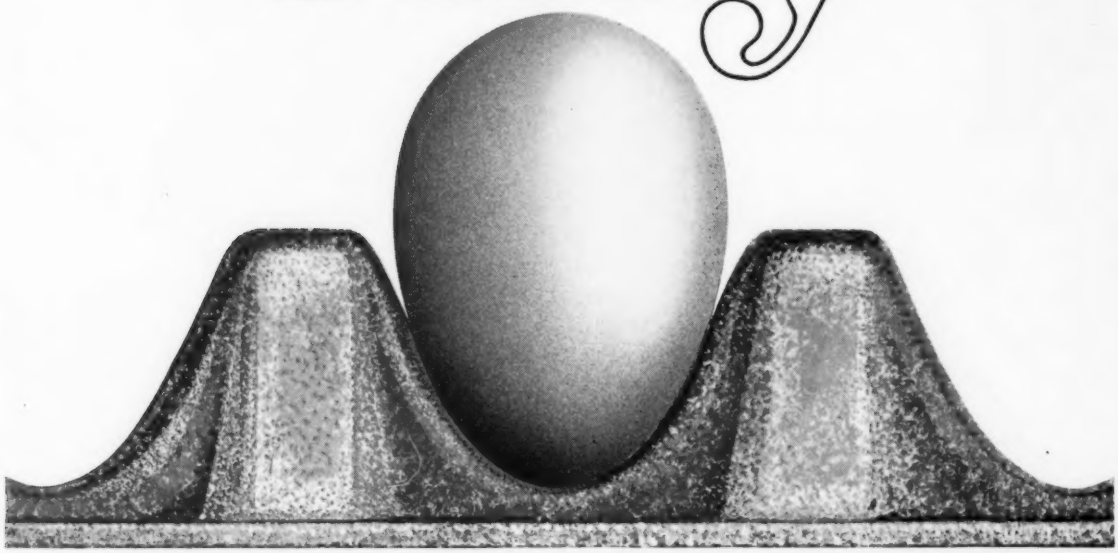
.....YOU REALLY SAVE WITH.....

TRIANGLE

PACKAGE MACHINERY COMPANY

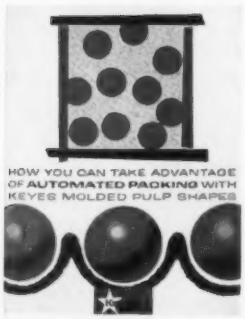
6631 W. Diversey • Chicago 35, Illinois
Telephone TUxedo 9-0200

Ask any



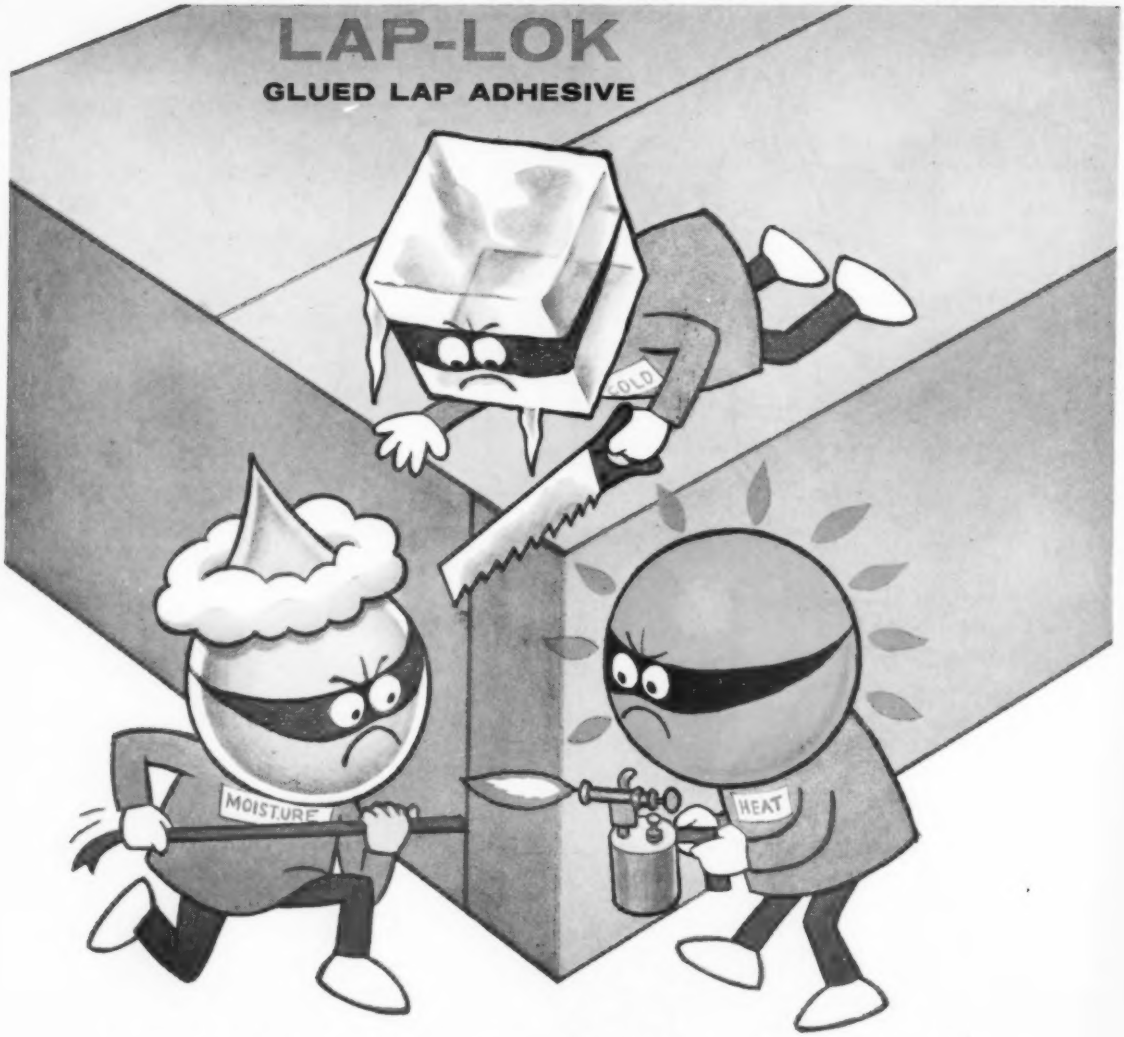
The safest, slickest way to travel is in a Keyes molded pulp package. Molded pulp is the one inexpensive packaging material that combines rigidity with remarkable cushioning properties. That's why better than 75% of all the eggs produced in this country travel first class in molded pulp packaging.

Give your products the same protection and automate your packaging procedures at the same time by using molded pulp packaging. You eliminate fillers, dividers and time-consuming set-ups, reduce costs, cubage and breakage. Often, too, molded pulp gives more protection with less material involved.



For information and a complimentary copy of Keyes' new booklet, "How You Can Take Advantage of Automated Packing with Keyes Molded Pulp Shapes" write on your letterhead to Mr. Dudley Smith, Product Development Manager, Dept. PE-10 Keyes Fibre Company, Waterville, Maine.

KEYES
MOLDED PRODUCTS



WITHSTANDS ALL THE ELEMENTS

Rainy or bone-dry, 140° F. to sub-zero temperatures, LAP-LOK bonds springy flaps safe and tight throughout. Take summer heat in warehouses or boxcars for example:

LAP-LOK withstands ten pounds pull at 140° F. indefinitely when other glued lap adhesives fail in five minutes or less.

LAP-LOK may be used with all lap-gluing machines, any type, any speed. Dries to a colorless, transparent film. Leaves no unsightly squeezeout. No odor. No hazardous flammable solvents.

LAP-LOK is worthwhile insurance against handling and storage losses. It has an unmatched record of over six years' trouble-free usage. Write for details.

National ADHESIVES

NATIONAL STARCH and CHEMICAL CORPORATION

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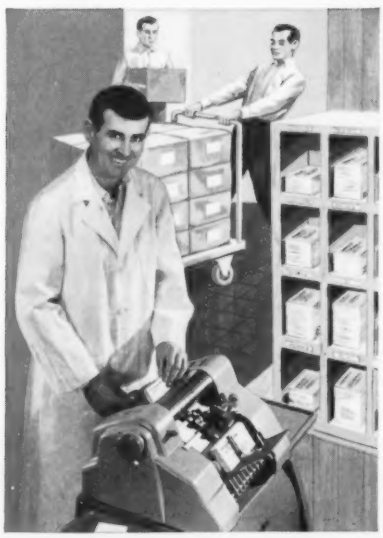
And All Principal Cities in the United States, Canada, England and Mexico

Cut down label waste

with day-to-day Tickometer imprints–



Why pre-print on labels specifications which can change, make labels unusable? / Reduce label waste and inventories by Tickometer imprinting for current production. / The Tickometer imprints ingredients, weights, sizes, codes, prices. Speed: several every second. / Handles most paper weights and finishes and light card stock. Prints from type, electros, rubber mats. Feeds and stacks automatically. / Set in minutes without tools. Can be used by anybody. / Sold or leased. PB service available from 320 points. / Ask any PB office for a demonstration, no charge. Or send coupon for free booklet.

Also available, Model 4800 Package Imprinter for cartons, bags, containers, folded packages, etc., up to 7,500 an hour. Set without tools. Easy for anyone to operate. Cuts inventories and waste. Ask for a demonstration. Or check coupon for booklet.

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Imprinting & Counting Machine

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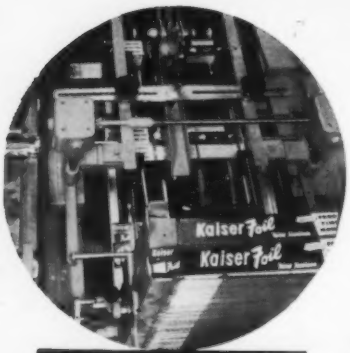
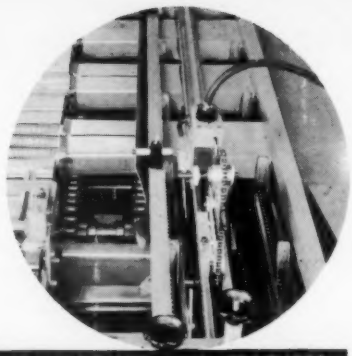
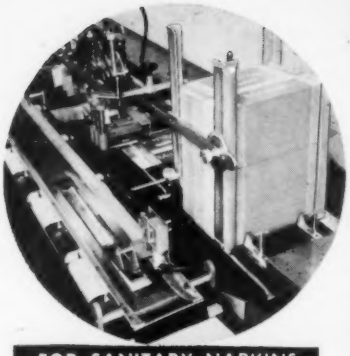


FOR ALUMINUM FOIL

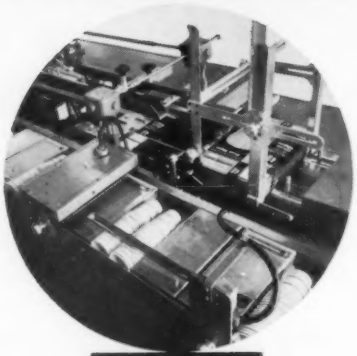


FOR COOKIES AND CRACKERS

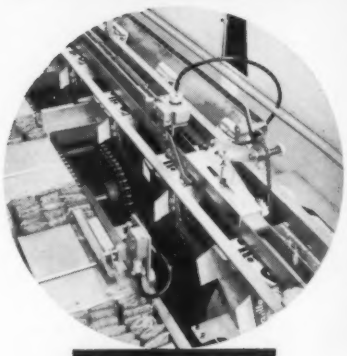


FOR SANITARY NAPKINS

PIES AND CAKES



PAPER CUPS



SCOURING PADS

the perfect combination of speed and flexibility

CECO MODEL 50 AUTOMATIC

Here is the machine specifically designed for the problem package – rolls of aluminum foil, sanitary napkins, paper products, cookies – any product that can take advantage of CECO's bucket feed method. Automatic? Right, fully automatic. This is a constant motion cartoner in which the carton is opened, product inserted, and carton closed – automatically. The opportunities to save on labor costs are exceptional. Flexible? Right again! Changeover from a 7" roll of aluminum foil to an 18" roll takes less than 30 minutes. And, like all CECO cartoners, the Model 50 can be had to handle either glue or tuck style cartons and can be accessorized to meet individual requirements.

A MACHINE FOR EVERY REQUIREMENT

Other CECO machines include the Model 3901 glue sealing machine, the Model 40 semi-automatic cartoning machine, and the Model 45 fully automatic.

CECO

CONTAINER EQUIPMENT CORPORATION
BLOOMFIELD, NEW JERSEY

CONTAINER EQUIPMENT CORPORATION
78 LOCUST AVENUE, BLOOMFIELD, NEW JERSEY

Please send literature checked off:

☐ Model 3901 ☐ Model 45 ☐ Model 40 ☐ Model 50

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COMPANY_____

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SEE US AT THE PMMI SHOW BOOTH 728

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PROBLEM: How to specify moisture protection for your product without being an expert on packaging papers or coatings

SOLUTION: With International Paper's new "Levels of Protection" you buy precisely the packaging protection you need and no more

Now, with its "Levels of Protection," International Paper cuts through the confusion resulting from the many different types of moisture-barrier papers available today.

The "Levels of Protection" system provides the first effective yardstick for comparing one moisture-barrier paper with another. This means you don't have to be an expert on papers, coatings and weights to get the best packaging for your money.

This new rating system evaluates all our moisture-barrier papers—regardless of type or weight of coating—against a scientifically graduated scale of *levels of protection.* Knowing what product you package, we can quickly recommend the most effective level of protection for that product.

But this rating system has another dimension. Since we can supply a number of different types of moisture-barriers for any given level of protection, we can offer you the *one* barrier that *most economically* furnishes the level of protection you require for your product.

This new system is another example of the complete packaging service offered you by International Paper. Service which includes a complete range of paper packaging and paper packaging materials, skilled packaging engineers, printing and design service.

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Manufacturers of papers for magazines, books, newspapers • papers for home and office use • converting papers • papers and paperboards for packaging • labels • folding cartons • milk containers • shipping containers • multiwall bags • grocery and specialty bags and sacks • pulps for industry • lumber, plywood and other building materials

fmc ...first in Pouch Packaging

STOKESWRAP "1000"

the completely new pouch-forming, filling and sealing machine with almost unbelievable versatility!

From FMC—who introduced pouch-packaging equipment and developed Stokeswrap, the standard of the industry — now comes the new "1000," a double-tube machine with all the advantages of two single-tube machines, but at less cost. The many new design features of the "1000" give the equipment an amazing flexibility that makes it ideal for large and small plants alike.

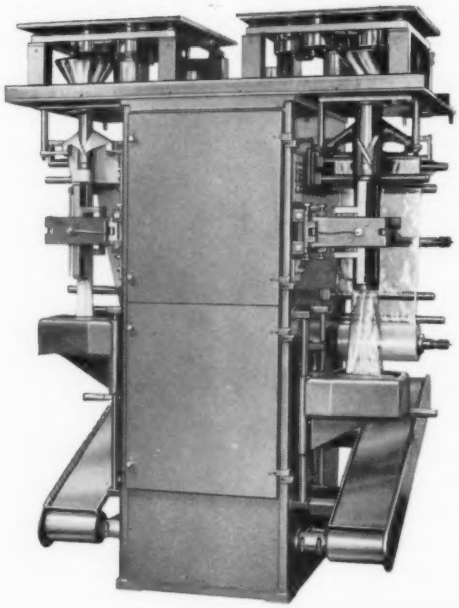
In addition to including all the proven Stokeswrap features for packaging free-flowing products such as frozen foods or candies, the "1000" has been designed to be the most versatile pouch-making machine available.

The amazing versatility of the "1000" is due to the separate drives that make it possible to operate either of the two tubes independently of the other.

The "1000" can simultaneously . . . run two different types of film . . . in two different sizes . . . with two different products . . . by means of two different feeds . . . with two different types of sealing method . . . and two different types of pouch . . . at two different speeds.

Further, production is continuous. If one side is shut down for changeover or maintenance, the other side continues to operate. And the "1000" can be purchased as a single-tube unit and the second tube added later, all at less cost than separate units.

PLUS ALL THESE FEATURES—Speeds up to 150 packages per minute. Sizes from 2" x 3" up to 8" x 14½" (with 200 cu. in. of product). New plug-in sealing mechanisms for quick change of sealing method. Side-mounted filling tubes and web rolls for easy "threading" and accessibility to moving parts. Practically every type of heat-sealable film, paper, foil or laminate. Quickly adjustable volumetric pocket capacities. Much less floorspace than two single-tube units. Waterproof filling mechanism for steam cleaning and washing down. And all with complete flexibility of operation.



Write today for complete details and specifications on the versatile new STOKESWRAP "1000."

See it in operation at Booth 605, PMMI Show.

fmc CORPORATION

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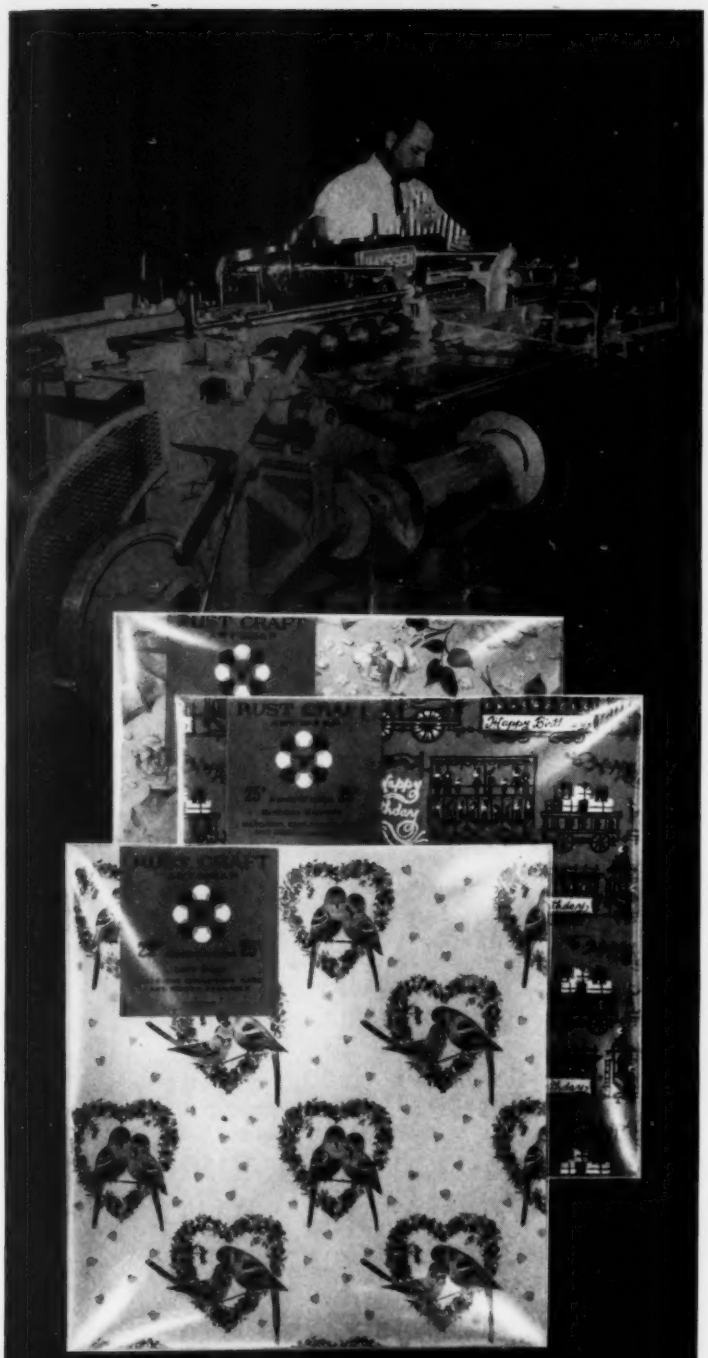
PACKAGING MACHINERY DIVISION
Stokes & Smith Plant
4900 Summerdale Avenue, Philadelphia 24, Pa.



Sparkle and clarity, together with excellent machinability, made Olefane the packaging choice of Rust Craft Publishers.

Rust Craft gift-wraps its gift wrapping paper in

*OLEFANE**

...the tough new polypropylene film

Rust Craft uses Olefane for these excellent reasons:

MACHINES BETTER. Has just the right stiffness and slip for smooth, high-speed wrapping on Rust Craft's Hayssen machines. Reduces reruns. Won't break and run. Heat sealing range is not critical, either.

COSTS LESS. New low price and extra-high yield of Olefane (up to 34,500 sq. in. per pound) make it the best packaging buy on the market. And Olefane is the lightest of all transparent packaging films.

BOOSTS SALES APPEAL. Sparkle and crystalline clarity of Olefane let customers see the eye-appealing patterns of the gift wrapping. And its "feel" is pleasant—warm and inviting.

PROTECTS LONGER. Won't embrittle or deteriorate with age. Can lie on the shelf indefinitely and still keep the product looking fresh, clean and highly "buyable."

Olefane is being chosen for a fast-growing number of packaging applications. For complete information on this versatile, low-cost packaging film, write for Booklet AO-100.

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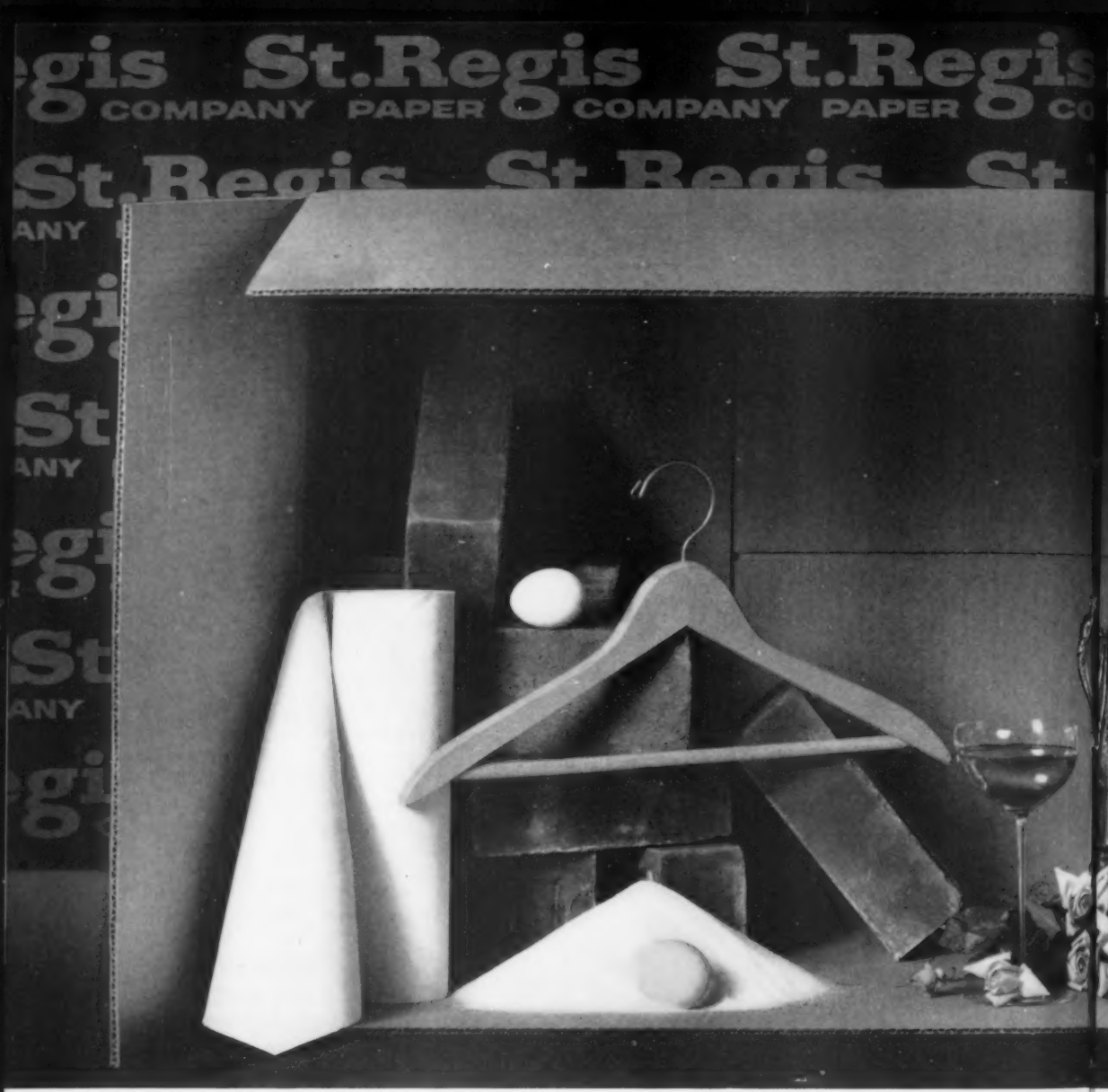

PLAIN THINGS...FANCY TH

These widely-assorted items have one thing in common: each travels de luxe in the corrugated safety of a St. Regis® container. It's our job to know a world of different products —and to design just the right containers for shipping them.

And, if you think we have designs on your product—you're right! We make it our business to ask for new opportunities to design boxes that give your product greatest protection at lowest cost. You may need "difficult" boxes . . . boxes with special insulation . . . display shippers . . . boxes with full printing . . . boxes that weather the weather. If the box you need doesn't exist, we'll create and test it. And it will be the sturdiest, safest box your product ever traveled in.

You ca
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anything—

ANYTHING GOES...IN AST

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THINGS...BRIGHT THINGS

You can step into this imaginative world of protective packaging at any of our nation-wide plants. Each has a staff of creative design engineers, modern production techniques, and years of experience in virtually any industry you name. Corrugated boxes for plain things, fancy things—*anything*—are designed and made at these St. Regis plants:

Birmingham, Ala. • Fullerton, Calif. • Salinas, Calif. • Jacksonville, Fla. • Atlanta, Ga. • Chicago, Ill. • Dubuque, Ia. • Hagerstown, Md. Minneapolis, Minn. • Jersey City, N.J. • Buffalo, N.Y. • Albany, N.Y. Canton, O. • Cleveland, O. • Coshocton, O. • Newark, O. • Crafton, Pa. • Mt. Wolf, Pa. • Pittsburgh, Pa. • Dallas, Texas • Garland, Texas Houston, Texas • Tacoma, Wash. • Grafton, W.Va. • Milwaukee, Wis. Or write: Container Div., St. Regis Paper Company, 150 E. 42 St., N.Y. 17, N.Y.

ST. REGIS CONTAINER

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SEE the LATEST ADVANCE in AUTOMATIC PACKING!

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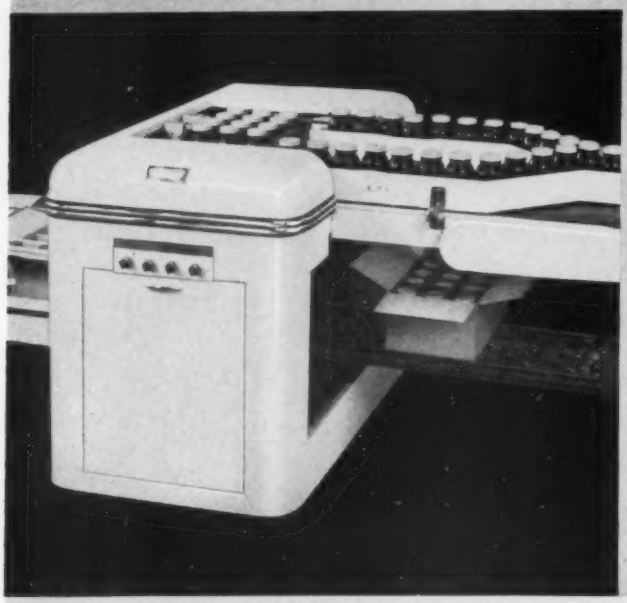

MILLER HYDRO

Air-Matic

CASE PACKER

GENTLY, AUTOMATICALLY EFFICIENTLY PACKS

JARS BOTTLES

CANS FLASKS

. . . Regardless of Size or Shape

THE PACKER THAT GENTLY BABIES YOUR PRODUCT

SETTING NEW EFFICIENCY STANDARDS IN NEARLY 800 PLANTS . . . MEETS TODAY'S HIGH-SPEED PRODUCTION REQUIREMENTS AND CUTS COSTS!

The Miller Hydro Air-Matic Case Packer is setting new standards of efficiency in many industries where speed, reliability and versatility in automatic packaging are imperative. Whether you pack jars, bottles, cans or flasks of either glass, plastic, metal or paper, this compact, versatile machine does the job with remarkable trouble-free smoothness. It gives you high-speed packing with no breaking, no scarring, no damage to labels. Whether you're concerned with production, quality control or costs, we invite you to compare the Miller Hydro Case Packer with any other packer. You'll be convinced it is the best engineered, the best built, best performing packer ever built.

IN ACTION AT THE P. M. M. I. SHOW

See the remarkable Miller Hydro Air-Matic Case Packer in action. See for yourself its capabilities and how it fits your needs. We'll be in Booth No. 315.

MILLER HYDRO

Bainbridge, Georgia, U.S.A.

Since 1913

MAIL ME IMMEDIATELY

Miller Hydro Co.,
Bainbridge, Ga.

Gentlemen: Please send illustrated brochure giving full details on the Miller Hydro Case Packer.

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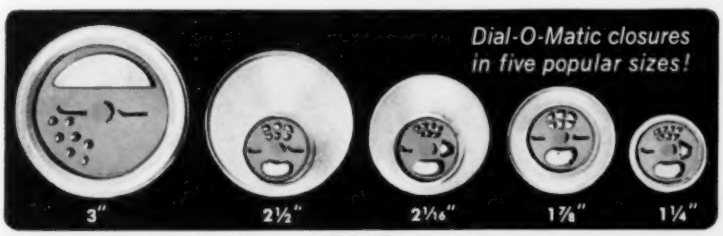
CLEVELAND CONTAINERS HELP Johnston SALES!

The ideal product-container combination is vitally important in the grocery field...where competition is the keenest!

These smartly styled Cleveland Containers give Johnston products visual impact . . . positive protection . . . functional design . . . *at low unit cost!* Both 8½-ounce containers are made of strong, spirally wound fibreboard covered with attractive two-color labels. The "Sugar Thins" container has a special deep-drawn metal plug to assure freshness. The "Cracker Meal" container features our patented two-color "Dial-O-Matic" closure, clicking to open and closed positions. If you want to up-style the packaging of your product, our Engineering Department will gladly assist you.

"DIAL-O-MATIC" CLOSURES cap the packaging of many granular products to perfection! Made of plastic, the wheel smoothly glides and locks in the positions of sift, pour and closed. Recessed rim permits stacking. Available in several styles, popular diameters, and in many interesting color combinations.



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PACKAGING BROCHURE!

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CLEVELAND CONTAINER COMPANY

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ALL-FIBRE CANS · COMBINATION METAL AND PAPER CANS
SPIRALLY WOUND TUBES AND CORES FOR ALL PURPOSES

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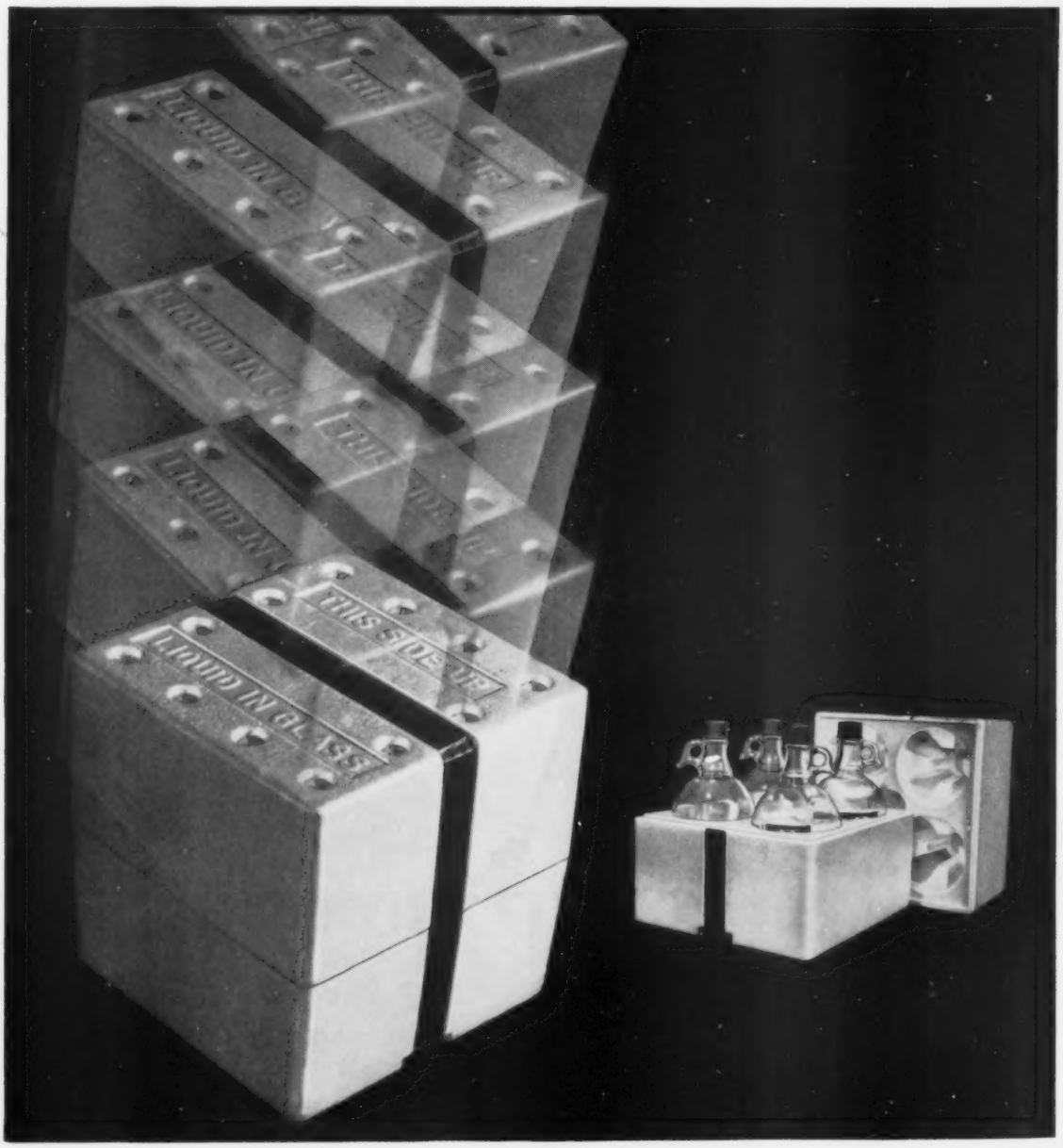
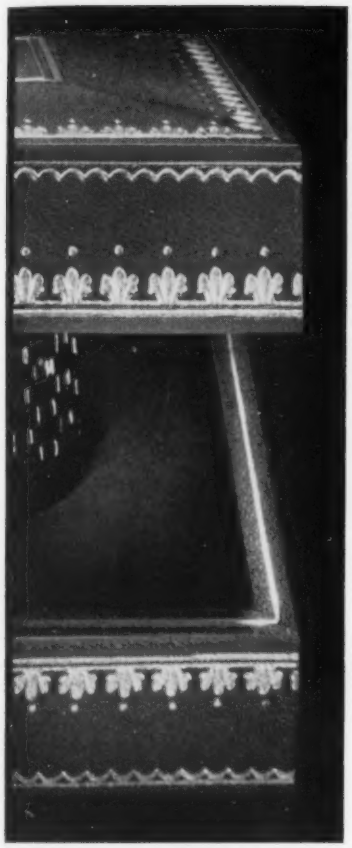
Abrasive Division at Cleveland

They couldn't break these acid bottles

These acid bottles were undamaged after a staggering ICC drop test: 16 falls from four feet. Secret is the 1¼ pound molded foam plastic case made from rigid, weather-resistant, chemical-resistant, shock-resistant DYLITE® expandable polystyrene. Developed by Allied Chemical's General Chemical Division, the case is used for its Baker & Adamson reagent acids. It has molded-in finger grips and interlocking top and bottom stacking grooves. More and more manufacturers are turning to DYLITE packaging because of its ultra-light weight, excellent cushioning and the ease with which it can be molded into intricate shapes at low cost. Since DYLITE can be colored or decorated in many attractive ways, it can make a package that's also a good-looking point-of-purchase display.





Plastic watch case looks like leather

This Wyler watch case is hard to distinguish from one made of leather, yet it's molded from tough, less expensive hi-impact DYLENE® polystyrene. It opens and snaps shut without chipping or troublesome cracking around the hinge. The deep red case is molded to a pebble finish and heat stamped with metallic gold trim. Box designed, molded and manufactured by Custom Manufacturing Company, Jersey City, New Jersey.

Push-button age needs plastics

Today's housewife spends a lot of time pushing buttons. The obliging Valve Corporation of America supplies her with aerosol actuators and caps molded of SUPER DYLAN® high-density polyethylene. They (1) cost less than metal, (2) easier to assemble, (3) have a smooth, glossy, rust and stain-resistant finish that can't chip or dent. Avon, Revlon, Coty, Lanvin, Fuller Brush, Stanley Home Products and Simoniz are just a few users.

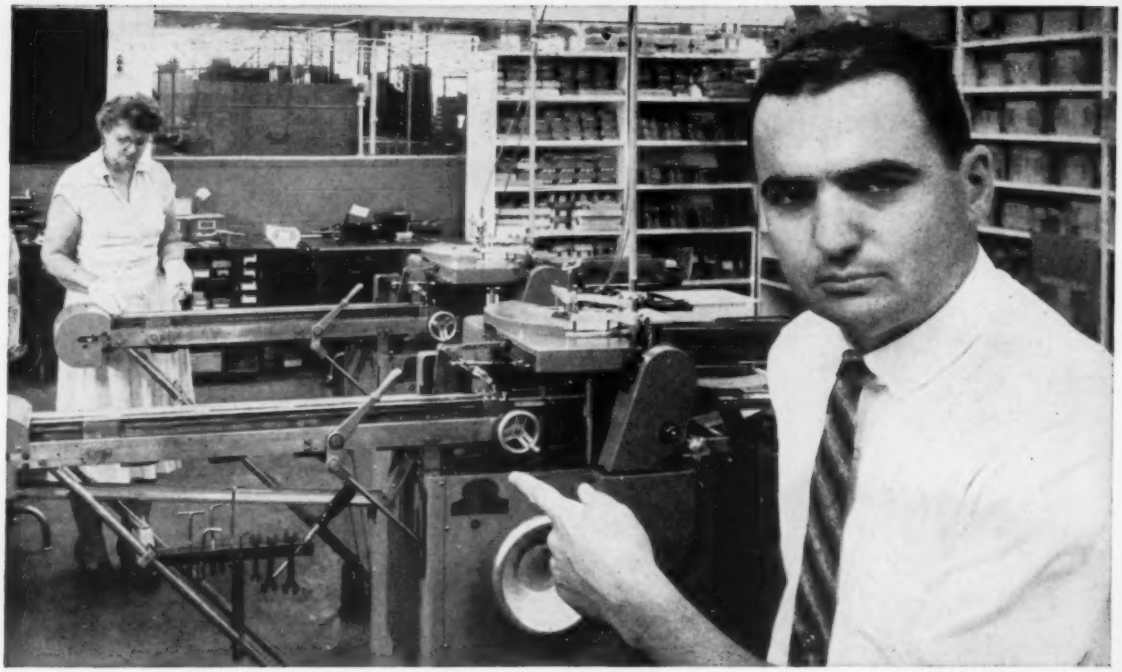
Put $170.00 in your pocket

High-speed packaging machines now make it possible for you to save real money—as much as $170.00 on each 1,000 pounds of the crisp, clear film you may now be using—and still have a better package! How? Use film made from SUPER DYLAN® high-density polyethylene and take advantage of its unidirectional, straight-line tear, low permeability and clarity. Furthermore, it is unaffected by extremes in temperature and humidity.

KOPPERS PLASTICS

For complete information about Koppers family of fine plastics for packaging, write Koppers Company, Inc., Plastics Division, Dept. 129, Pittsburgh 19, Pa.

KOPPERS®

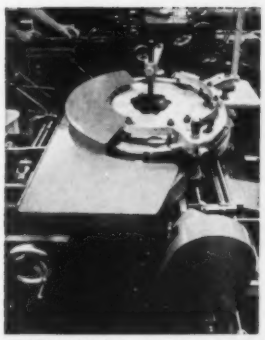


"These WRAP-KINGS play a big part in our cost-cutting program."

says Mr. Stephen A. Wood, Chief Industrial Engineer, Hoover Ball & Bearing Company, Ann Arbor, Michigan

"Hoover's DW WRAP-KING machines were installed at a time when we were in the middle of an all-out program to increase production and find new ways to cut costs. These machines provided a high degree of efficiency and flexibility in handling a wide range of individually wrapped bearings. By freeing personnel for more productive work, they helped achieve significant savings.

"Furthermore, downtime with our WRAP-KINGS has never been a problem. The painstaking care and thoroughness with which the C & K people installed these units and indoctrinated our people exceeded any we've ever observed. We've never needed a service representative from the factory since our WRAP-KINGS were installed . . . almost two years ago."



WRAP-KINGS in use at Hoover Ball & Bearing are adaptable to accommodate 50 different bearing types, with changeover taking as little as 3 or 4 minutes. Due to exceptional machine flexibility, large runs can be interrupted to fill urgent orders.

Hoover Ball & Bearing's successful experience with the DW WRAP-KING is typical of manufacturers and packagers all over the country. Cost reduction through high speed automatic packaging is the special ability of Crompton & Knowles Packaging. Whatever your particular requirements may be, from a single machine to completely integrated lines, C & K know-how can provide the most efficient answer. For complete details, and leasing arrangements, write Wrap-King Division.

C&K Stands out in PACKAGING

REDINGTON AUTOMATIC MACHINES for CARTONING WRAPPING • SPECIAL PACKAGING

CROMPTON & KNOWLES PACKAGING CORPORATION

WRAP-KING DIVISION Agawam, Mass.

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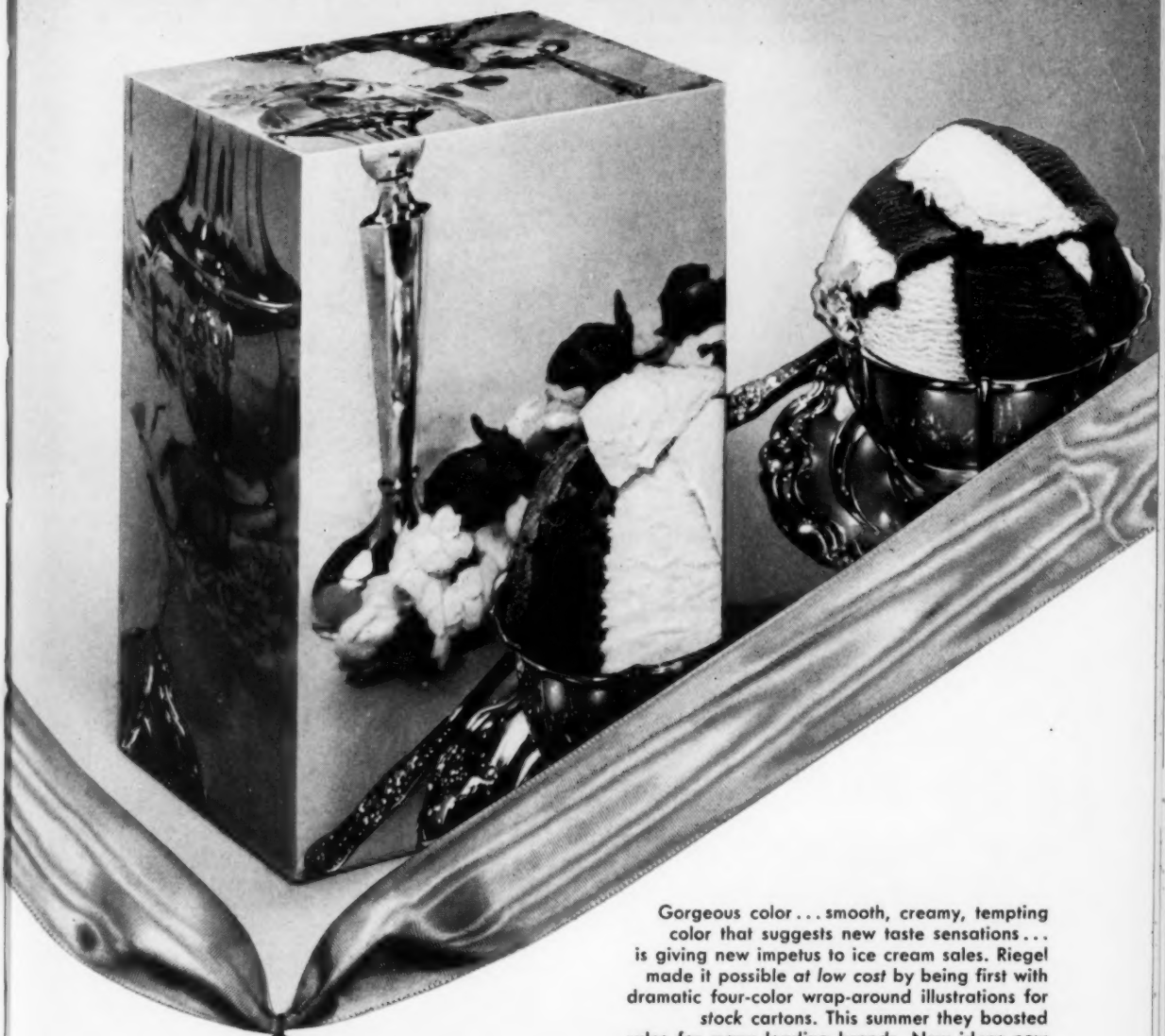
Riegel

Creative Climate for Tomorrow's Packaging



...the new ideas come from **Riegel**

Gorgeous color . . . smooth, creamy, tempting color that suggests new taste sensations . . . is giving new impetus to ice cream sales. Riegel made it possible *at low cost* by being first with dramatic four-color wrap-around illustrations for *stock* cartons. This summer they boosted sales for many leading brands. New ideas now coming will keep this leadership for Riegel customers.

Imaginative packaging concepts like this are available to you too, custom tailored by Riegel's design staff for a wide variety of products . . . in cartons or flexible packages.

You will be interested in the new, broader range of Riegel materials and services shown on the following pages.

RIEGEL PAPER CORPORATION, 260 MADISON AVE., NEW YORK 16, N.Y.

Specialist in the packaging of foods, drugs, and soft goods

Flexible packaging . . . carton board . . . folding cartons . . . carton liners

For more information circle No. 248 on Reader Service Card

New Brilliance...Added Protection for Kentucky Club Aromatic Mixture

New high-gloss plastic coating gives extra appeal to four-color gravure printing on Kentucky Club's plaid pouch. Now made with Riegel Pouchpak*, a coated/laminated paper that resists cracking in repeated foldings and refoldings and keeps tobacco fresher.

Making packaging ideas *work*... combining protection, eye-appeal and machine efficiency... this is Riegel's business. We've a flair for thinking of every product as something different... something special... and developing for it the one best packaging material, be it pouch paper, glassine, foil, film... or combination... printed, coated, or plain. Write for more information today... for the new ideas come from Riegel.

Flexible Packaging Division
RIEGEL PAPER CORP., 260 Madison Ave., NYC 16
Flexible packaging materials for foods, drugs, chemicals
**"Pouchpak" is Riegel's registered trademark for its coated/laminated paper*

Striking New Package Personality for McCrory's created and coordinated by Lassiter

To launch McCrory-McLellan-Green Stores' own line of infants-wear, Lassiter designed a strong-brand-identity group of polyethylene packages for the entire department, and coordinated production with all their suppliers.

Unified packaging to increase customer appreciation of store-wide quality is a design requirement that Lassiter has met many times. As the leading specialist in soft-goods packaging, we understand both sales and production problems. We know how to create packages that will catch the shopper's eye, promote sales . . . and minimize your production costs.

This kind of *practical* creative packaging can help you. May we lay the world of design at your feet? Write Lassiter today.

Lassiter Sales
RIEGEL PAPER CORP., 350 Fifth Ave., NYC 1
Designers and producers of film, foil, paper and paperboard packaging, inserts, riders, labels, bands and tags.

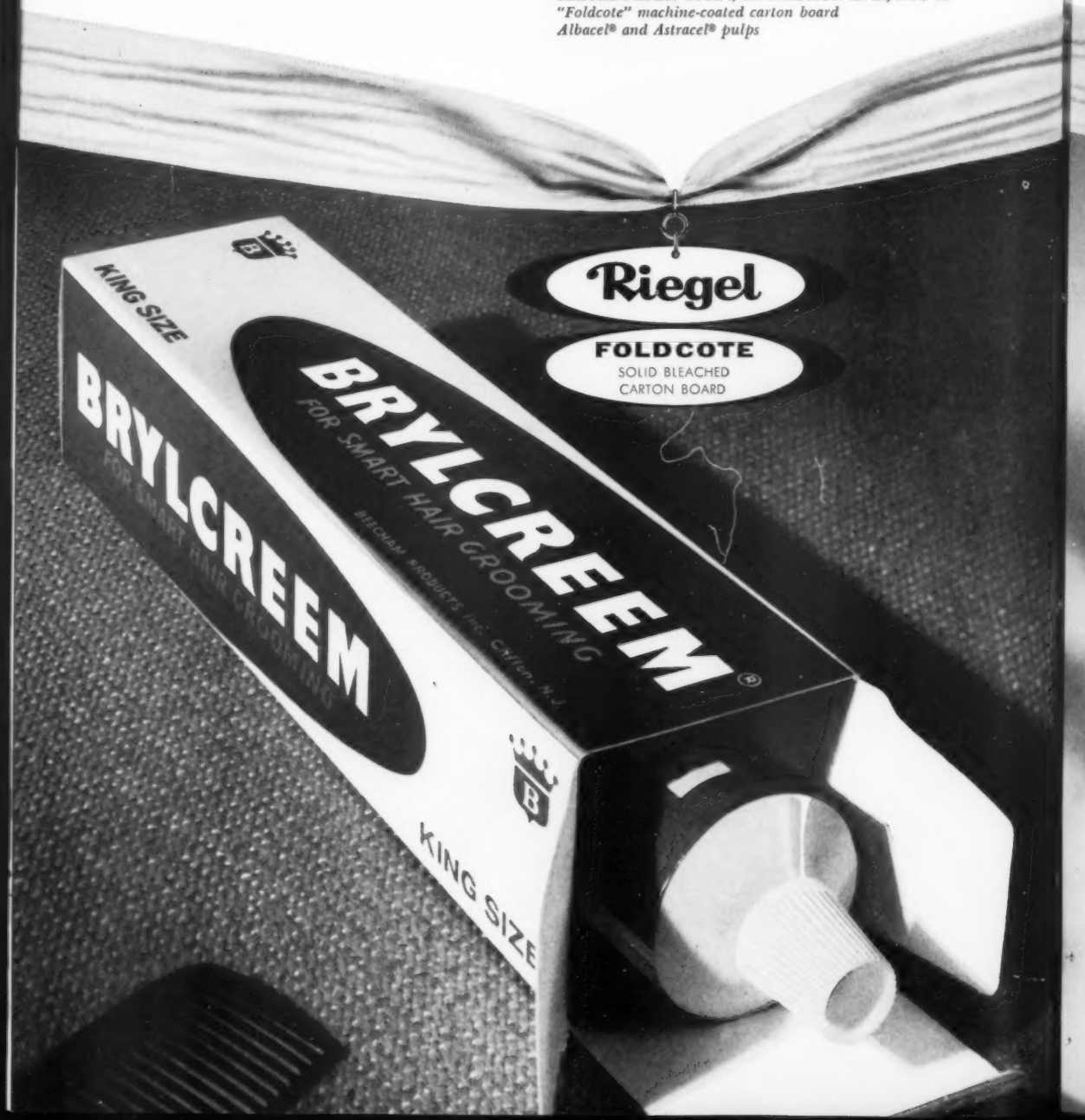
BRYLCREEM...*another quality product that now uses Riegel Foldcote®*

Smart, smooth and neat... Brylcreem's eye-catching carton now uses Riegel "Foldcote" bleached board. It's stronger, stays crisp and clean despite constant shelf abuse and handling. Printed letterpress in two colors by The Nevins Co., Clifton, N. J.

For noticeably stronger, brighter cartons... and extra eye-appeal... try Riegel's outstanding new coated carton board..."Foldcote". Super-white for color brilliance, super-smooth for high fidelity reproduction, super-strong for rugged, rigid packages that keep that clean look.

Your future, too, can be brighter with "Foldcote". Ask for samples and information. Ask too, about other Riegel solid bleached boards. Export inquiries invited. Call Riegel today...for the new ideas come from Riegel.

Pulp and Paperboard Division
RIEGEL PAPER CORP., 260 MADISON AVE., NYC 16
"Foldcote" machine-coated carton board
Albacel® and Astracel® pulps



Borden's Starlac®... more good things now come in Riegel Cartons

Borden's new five-color "Starlac" carton... gravure-printed on Riegel Foldcote®... formed, filled, sealed on Bartelt machinery.

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Don't let out-dated batch methods limit productivity

By Preston R. Bassett, Jr.
Assistant to Sterile Filling Production Superintendent
Lederle Laboratories Division
American Cyanamid Company, Pearl River, New York

Increased production of sterile-filled pharmaceuticals brought with it high-speed automatic equipment in all phases of production and packaging—except in the sterilization of glassware. Here, technological developments lagged, and batch sterilization methods damped productivity. Then Lederle engineers tackled the problem and after five years' work came the breakthrough: continuous in-line sterilization of glass vials, at a cost 75 per cent below the old method. Mr. Bassett, in describing the installation, also details each component of the line.

If all your production operations but one are on a high-speed continuous basis, and if that one exception applies to practically every product you produce, your over-all productivity suffers immeasurably. The speed of your slowest component is governing output.

Batch sterilization of glass vials in the pharmaceutical industry is a prime example of such a situation, damping the efficiency of high-speed automatic equipment and nullifying to some extent technological advances in packaging sterile-filled products.

But what can you do about this problem? You have these choices:

1. Live with the situation as is.
2. Try to up the production of the determinant unit or operation –if it isn't already working at maximum capacity.
3. Develop the necessary equipment and methods to automate the maverick operation.

Outline Objectives

We chose the last approach. Lederle management organized a team of scientists and engineers under the direction of William K. Hallock, sterile filling production superintendent, to tackle the problem.

Discarding the conventional batch method as obsolete, we outlined our objectives and set a goal: to develop both a glass vial sterilization technique and the necessary equipment to allow continuous automatic operation of our entire sterile filling and packaging line—from unscrambling and feeding vials at one end to automatic case sealing at the other.

Research Pays Off

After some five years of basic and applied research and development, and a half million dollars later, came the breakthrough: continuous in-line sterilization of glass vials by high temperature-short time sterilization techniques. We were successful in completely automating all segments of our high-speed sterile filling lines.

Need Bacterial Criterion

In any work involving sterilization, you first have to establish

1 UNSCRAMBLER, IN-LINE STERILIZER, and control console. Stationary guides divide unscrambler conveyor into 20 columns, providing constant feed to vacuum-air cleaner. Operator at entry end of sterilizer checks transfer of vials from cleaner to sterilizer conveyor.

a criterion or delineate the destruction zones in which it is safe to operate from a bacteriological standpoint. In other words, you must be certain that the time-temperature relationships you employ achieves sterilization. All bacterial spores or pyrogens must be completely destroyed.

We previously reported the results of our *bacteriological* works* as well as details of the experimental units leading to the design of our present line.

It is important to note in this connection that the time-temperature cycle we decided on for our new line (650-700°C. for 60 sec.) is well into the pyrogen destruction zone, according to this work, and yet below the danger point of strain formation in either Type I or Type III glass.

Build Production Unit

Our mechanical research and development department, under the direction of Arthur S. Taylor, took over the job of designing the production unit and building and installing it as a part of a completely new sterile filling and packaging line.

On the line we can sterilize and render pyrogen-free small (up to 5cc.) vials at the rate of 300/min. Equivalent batch sterilization takes 2-5 hr. at 275°C.

Clean Vials First

Vials are unloaded from palletized trays onto the conveyor belt, which is divided into 20 columns by stationary guides. (See Fig. 1.) We first air-vacuum clean the vials —20 at a time—with the aid of a high degree of turbulence to remove any lint, dust, or foreign particles. You shoot air in with jets and simultaneously pull everything out with vacuum.

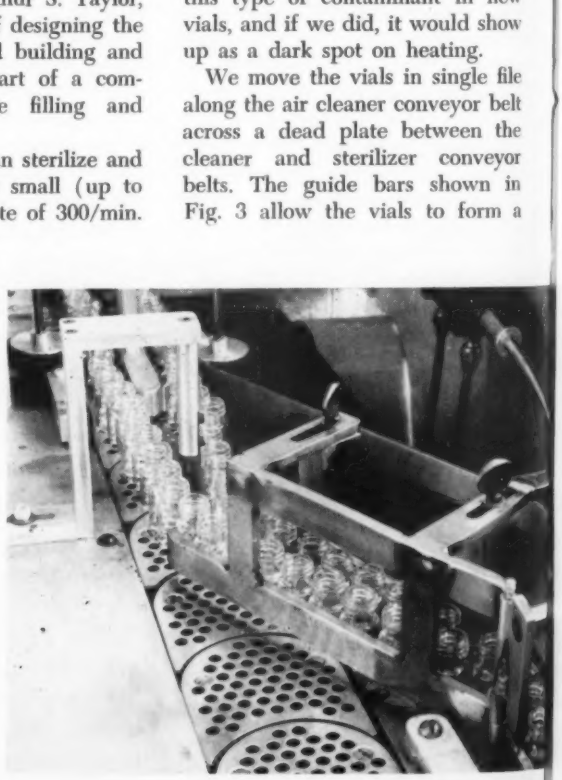
The air cleaner (see Fig. 2) is a standard machine of a type used in the liquor industry for many years.

We find air cleaning of the vials superior to water rinsing in several ways and are well satisfied with this method. It removes all foreign particles, and we do not have to dry the glassware nor concern ourselves about water marking. While this method of cleaning does not remove sticky water-soluble deposits, this is no problem for us since we do not experience this type of contaminant in new vials, and if we did, it would show up as a dark spot on heating.

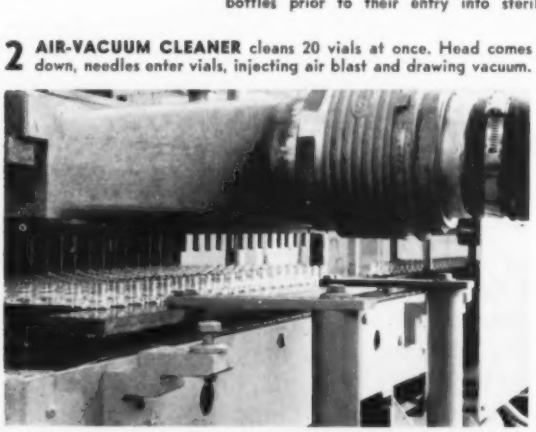
We move the vials in single file along the air cleaner conveyor belt across a dead plate between the cleaner and sterilizer conveyor belts. The guide bars shown in Fig. 3 allow the vials to form a

*Bulletin of the Parenteral Drug Association, 15:3 May-June, 1961.

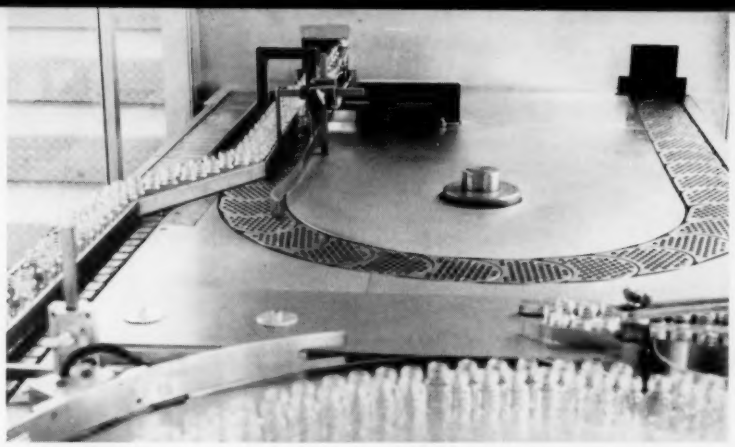
3 GUIDE BARS guide vials into double row as they cross dead divider between conveyors. Rubber wheels (upper left) space bottles prior to their entry into sterilizer.



2 AIR-VACUUM CLEANER cleans 20 vials at once. Head comes down, needles enter vials, injecting air blast and drawing vacuum.



4 CENTRAL CONTROL CONSOLE outside sterile filling area provides remote control of entire line, records vital operations.



5 COOLING END OF STERILIZER terminates within glass-enclosed accumulating turntable located in sterile filling and capping room. Switch in guide (center background) diverts vials that are not properly sterilized around conveyor and back through sterilizer.

double row as they cross the dead divider between the conveyors. Then they ride past a V-shaped stationary plow in the center of the sterilizer conveyor which spaces the two rows of vials about 1 in. apart across the perforated stainless steel platforms of the conveyor.

The power-driven rubber wheels in the top left corner of Fig. 3 space the bottles along the conveyor platform so that they do not touch each other. We do not try to space the vials evenly here but merely keep them from touching each other so they heat and cool evenly in the sterilizer.

Heater Unit

The vials then move into the heater section. The 14-ft. long heating unit, enclosed in the insulated aluminum-sheathed tunnel, uses 15 tubular-type heating elements, thermostatically controlled from the control console shown in Fig. 4. The speed of the conveyor is adjustable so that we can get the exact time-temperature relationship we want. Traveling at approximately 14 ft./min., it takes 60 sec. for a given point on the conveyor to move through the heater tunnel, which is kept at 670°C. During this time the vials heat up to about 485°C.

We built a glass "window" across the top of the sterilizer hood to let line personnel see into the unit at the point where the vials enter the heating unit. This way we can check the vials' progress to see they make the transition from the cleaner conveyor belt to the sterilizer conveyor plates without jamming or other difficulty.

We mounted a radiant heat scanning device inside the hood at the exit end of the heating tunnel to measure vial temperature and connected it to an automatic recorder at the panel control center. Oven temperature, taken from the center of the heater section, is shown on another chart.

Several "feed-back" controls function here to protect us from having vials go through without proper sterilization. If the temperature of the vials drops below a critical point, a signal actuates a timer which, 4 min. later, diverts these "non-sterile" vials and sends them back around again to be resterilized. When they come around on the return belt, they actuate a photocell. This stops the air cleaner and holds back the main vial supply until the returned vials are safely past. Then the vial supply starts up again.

This diverter also guides vials back through the unit when the line ahead is stopped for any reason and the vials build up to a certain point. We cannot stop the moving belt because it would cause damage in the heating section, so we recirculate vials until the line starts up again.

Cooling Section

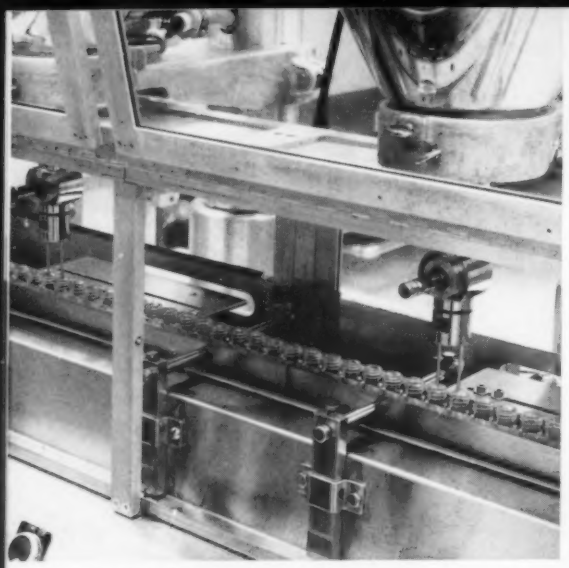
We allow 4 min. for cooling the vials to room temperature, which explains the length (61 ft.) of this part of the equipment. We maintain sterile conditions in the cooling section by using carefully filtered, sterile air and completely enclosing the unit. Air spargers and cooling coils accomplish the cooling, supplying enough air to maintain a slight positive pressure.

We mounted the air spargers and water-cooled plate coils along the walls of the cooling section. Blowers circulate the filtered, sterile air through his section of the tunnel.

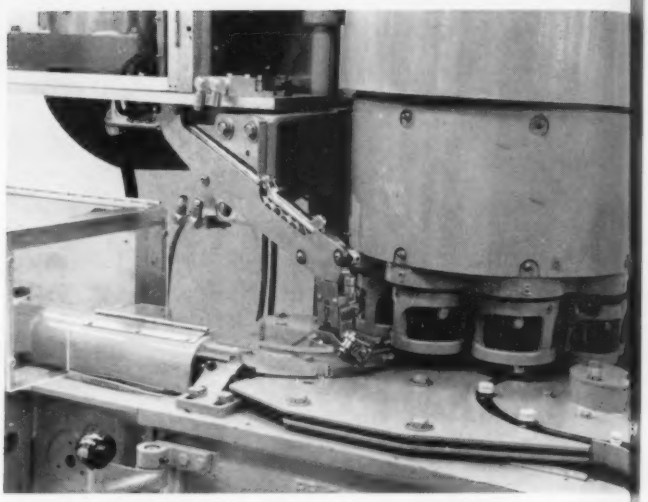
Filling And Capping Room

The cooling end of the sterilizer terminates within a glass-enclosed accumulating turntable (see Fig. 5) located in the filling and cap-

Preston R. Bassett, Jr. holds an A.B. degree (cum laude, with honors work in bacteriology) from Amherst College and a B.S. in chemical engineering from Rensselaer Polytechnic Institute. He joined Lederle in 1951 as a process engineer in fermentation and for the past three and one-half years has been a member of the technical staff of the filling and packaging section. Mr. Bassett is a member of American Chemical Society, the New York State Society of Professional Engineers, and American Association for the Advancement of Science.



6 DUAL-HEAD AUGER-TYPE FILLER with two needles on each head fills 300 vials/min. with ±1-2% accuracy. Two jacketed hoppers keep product at constant temperature.



7 EIGHT-HEAD ROTARY CAPPER puts roll-on aluminum cap on each vial as it emerges from glass-enclosed filling conveyor. Caps feed down slanted track. Photocells shining through track stop line if caps are not in track.

ping room. Thus at the end of the in-line sterilizer we have sterile, pyrogen-free, cooled vials ready to be filled and capped.

In the filling room we have many special materials and techniques to meet the stringent standards needed for sterile filling. For example, girls working in this area change into special uniforms before entering the room. We sprayed the walls and ceilings with a very durable polyester resin coating to provide a smooth surface for cleaning.

We use ultra-violet lights in the room and parts of the hooding to keep it bacteria free. We also clean this room with long-lasting germicidal cleaning solutions. The air supply to the room is filtered through a Cambridge absolute filter and is designed to provide a positive air pressure in the room.

Use Dual-Headed Filler

Our Mateer filler is a dual-headed auger-type with double or triple needles on each head. (See Fig. 6.) We can use filling strokes up to 75/min. with a small dose fill. The accuracy or precision is in the neighborhood of ±1 or 2 per cent. We pump product from an insulated 50-gal. drum (to keep it cold) to the two filling hoppers, where cooling jackets maintain a constant filling temperature.

Use Aluminum Roll-On Caps

Filled vials pass through the hooding to the capper, where we put on aluminum roll-on caps, using an Alcoa 8-head rotary machine appearing in Fig. 7.

From the filling room the vials normally move on powered conveyors to our New Jersey labeler, shown in Fig. 9, and then to the cartoner.

We also made provision for bottom coding the vials with a coding machine and sending them to unlabeled stock.

Cartoner Has Two Folders

The Jones cartoner uses two circular folders to operate smoothly at 300/min. Since the roll-on cap we use is not tamper-proof, we make the individual cartons tamperproof by gluing the flaps. The cartoner also has a printing unit to put a code number on each box.

Individual cartons are grouped automatically into units of four (see Fig. 10) and placed by hand into multiple boxes holding 12 cartons. These multiple boxes are then put into shipping cases which pass through a Ferguson Co. case sealer for final sealing.

Central Control Console

The entire line is supervised from an Elgin Metalformers central control console outside the sterile filling area. (See Fig. 4.)

From this point the supervisor can observe and take action on the most vital operations of the line. There are remote count indicators, a running time indicator and recorder for the filling machine, temperature controllers and recorders for the in-line sterilizer, and an intercom system for communicating with the filling room and packaging line personnel.

The remote photocell counters indicate on dials the number of vials cleaned, how many reached the filler, and how many went to the labeler. When totals do not agree, the line supervisor checks into the operations to find out the reason for the discrepancy.

Separate control charts record oven temperature and vial temperature for more precise control of the sterilizing operation.

The two-way intercom between the control panel, the filling and capping room, and the cartoner keeps the line supervisor in touch with the whole line at all times. Also, this cuts down on the num-

ber of uniform changes made by the filling and capping operators as they can get their instructions from the supervisor without leaving the room.

Production Line Tests

Upon completion of the line we ran another series of bacteriological tests to establish that our in-line sterilizer met design specifications. Results showed successful pyrogen destruction at ambient temperatures of 630-650°C. (This test is more severe than one for the presence of bacteria.)

We also ran particle counts on the vials passed through the unit and found that even though they are cleaned a considerable distance from the filling and capping operation, the line is sufficiently protected to preclude physical contamination of the vials.

Based on results of our strain studies, we specify Type I borosilicate glass, particularly for product fills over 40 cc. This type of glass holds up well when heated to 485° C. and upon cooling does not show any strains. Type III glass in the smaller sizes also withstands this temperature and could be used successfully.

Our new in-line sterilizer eliminates many inconveniences associated with batch sterilization: we no longer have to transport vials in sterile containers to the sterile filling area; there is less possibility of recontamination of the vials between sterilization and filling.

New Line Has Advantages

We also realize a considerable saving in manpower, time, and operating costs. There is a major reduction in the labor needed to handle vials and trays. Now we start with a pallet load of vials, load them onto our line, and do not handle them again prior to final case loading.

When the line runs at full production capacity, we need 12 operators (three men and nine women) to staff it: two setup men are responsible for the equipment and one man handles line supplies; nine girls feed vials to the cleaner, tend the filler, capper, labeler, cartoner, and other equipment.

The line is designed to run vials of 5 cc. capacity at the rate of 300 /min. Batch sterilization previously took 2-5 hr. at 275°C.

We estimate the line cost us about $500,000 for R & D time and equipment, but the operating costs of continuous sterilization are approximately one-fourth the cost of the old batch method—representing quite a saving!

In addition, our new line offers another advantage: improved quality. We achieve this by closer, continuous control of all operations—from vial cleaning and sterilization through final packaging.

Serves Multiple Purpose

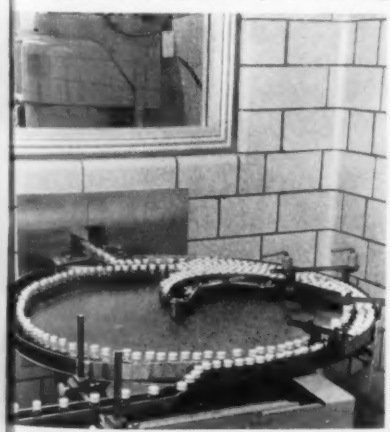
We originally built this line primarily for packaging such products as oral polio vaccine, which shows great promise. However, pending a federal "go-ahead" on production, we are making good use of the line in our R & D work as well as in other packaging.

Not going into full-scale production immediately upon completion of the line gave us ample opportunity to refine its operation and to test various materials on it. For example, we tested various glues with sample labels by running them through our new labeler with sample vials. We evaluated different glues for high initial tack—a property necessary for efficient high-speed labeling if you want the labels to stick immediately to the vials before they roll through a continuous running belt. This belt rotates the vials as they move along the line, wrapping a label around each vial.

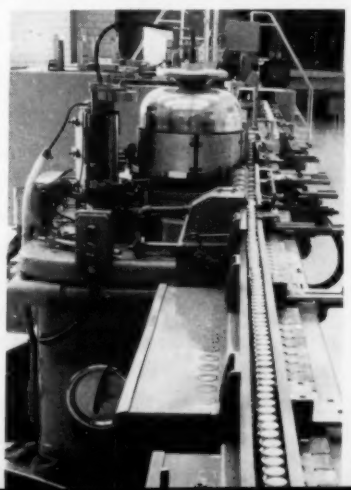
We also have used the line for several runs of sample packages.

The line is operating satisfactorily, and in future sterile packaging work it is expected to fulfill its function as a high-speed sterile filling line. *(End)*

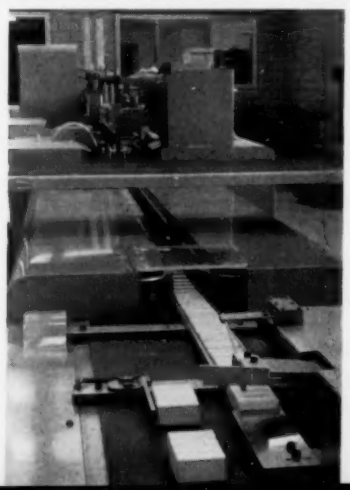
8 ACCUMULATOR-UNSCRAMBLER outside sterile filling area collects filled vials and then positions them for conveying to second accumulator prior to labeling.



9 SIX-HEAD ROTARY LABELER applies labels at rate of 300/min. to vials indexed by wood screw. Vials can also be bottom coded and sent to unlabeled stock.



10 CARTONER, with two circular folders, operates at 300/min. At grouping unit (foreground) ram pushes groups of sealed cartons onto conveyor for hand packing.



Aluminum foil's thermal properties offer packaging advantages

By A. B. McKee,
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Research Engineer, Foil and Packaging Division
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High thermal reflectivity and heat conductivity are two well-known properties of aluminum useful in many applications, but commercial packaging applications capitalizing on these properties have not been extensive in the United States. The same situation exists in Europe *(5)*.

These properties offer specific functional advantages in packaging. For example, utilizing aluminum's high thermal reflectivity for radiant heat to provide insulating qualities in foil packaging minimizes temperature changes of perishable products in transit or during storage. To prove this point, a series of tests were made to compare freezing rates of products packaged in aluminum, glass, plastic, and paper and to evaluate the effectiveness of aluminum foil as a package insulating material against heat or cold.

HEAT TRANSFER PRINCIPLES

To appreciate how aluminum offers thermal advantages for packaging applications requires some knowledge of the basic principles of heat transfer.

Heat may be transmitted from one body to another at a lower temperature by one or a combination of three processes:

Radiation—the transmission of heat through space by infrared or heat waves.

Conduction—the flow of heat through matter by kinetic energy.

Convection—the flow of heat by air currents from a warmer to a cooler surface.

Radiation

Heat transfer between two bodies (one at a higher temperature) separated in a perfect vacuum is by radiation alone. The rate of heat transfer depends upon absolute surface temperature, physical configuration, and emissivity or radiating power of the bodies' surfaces.

Since foil is an opaque material, it reflects any heat energy its surface does not absorb. Aluminum reflects about 95 per cent of infrared radiation and has a slightly lower reflectivity (85-88 percent) for white light or visible radiation.

The human eye is unable to judge the infrared radiation characteristics of a surface: surfaces that appear to be very good reflectors for visible light may be poor reflectors for thermal radiation of long wave lengths. For example, a black-pigmented paint coating exhibits low reflectivity to white light compared with a highly reflective white-pigmented coating, yet both reveal low thermal reflectivities (only 10-20 per cent) when exposed to infrared radiation.

Packaging people are not exploiting the thermal properties of aluminum foil as fully as they are some better-known properties—low permeability to water vapor, grease-proofness, or nonsorptiveness—according to the authors. They urge more attention to foil's high thermal reflectivity and heat conductivity. They offer test findings to support their views and include a summary of heat transfer principles as background for their key points.

Nonmetallic materials such as paper and plastics have poor reflectivity for radiant heat, as illustrated by the data in Table I. The high reflectivity of foil for radiant heat does not vary appreciably for annealed foil, hard foil, bright or dull foil produced by pack rolling or for foil that is embossed, roughened by mechanical abrasion, or by mild chemical etching.

Lacquer coatings on foil affect its thermal reflectivity depending upon the type and thickness of the coating, as illustrated by data in Table I. Unpigmented lacquers, whether clear or colored, cause only a small decrease in thermal reflectivity when applied as thin coatings *(1)*. A shellac wash coat (0.05 lb./3000 sq.ft. ream) applied to foil to make the surface receptive to printing inks produces a thermal reflectivity of about 90 per cent. With any given type and weight of coating, variation in reflectivity is expected because of differences in plasticizers, stabilizers, solvents, resins and other formulation modifications.

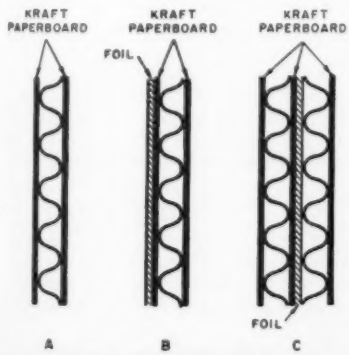
Table I also shows reflectivity data for various plastic-foil laminations. The high thermal reflectivity of the foil-polyethylene lamination (71-83 per cent) is particularly interesting when compared with the paper-polyethylene lamination, which reflects only about 9 per cent radiant heat. This thermal reflectivity is in the same range as that of most papers: about 5-20 per cent.

TABLE I

Thermal Reflectivity Of Radiant Heat By Foil, Paper, And Plastics

Material		Thermal Reflectivity* (%)			
Foil, plain					
Bright surface, pack rolled		95-97			
Dull surface, pack rolled		95-97			
Foil, lacquered		Clear Coatings			
mg./sq. in.	lb./ream	vinyl	nitrocellulose	methacrylate	epoxy
1	0.95	90	86	85	80
3	2.85	75	55	64	37
5	4.75	63	45	48	32
7	6.65	57	40	37	19
Laminations					
foil/0.001-in. polyethylene		71-83			
foil/0.001-in. polypropylene		75			
foil/0.001-in. rubber hydrochloride		43			
foil/0.001-in. polystyrene		38-44			
foil/0.001-in. polyvinylidene chloride		39			
foil/0.001-in. vinyl		37			
foil/0.001-in. polyester		33-35			
foil/0.00088-in. cellulose acetate		16			
paper/0.001-in. polyethylene		9			
Paper		5-20			

*Based on emissivity measurements made at 100°F. where the peak radiant energy has a wave length of 9.3 microns.



1 CORRUGATED PAPERBOARD STRUCTURES: A—plain single-wall; B—one side foil laminated; C—double-wall, foil concealed.

Conduction

A better understanding of heat transfer by conduction comes from considering an opaque homogeneous block of solid material in a vacuum, with one surface of the block at a higher temperature than its opposite surface. Since there can be no movement of air and the material is opaque, there will be no heat transfer by either convection or radiation. Thus, heat movement from the hot to the cooler surface is by conduction alone.

The thermal conductivity of the material governs the rate at which this type of heat transfer takes place. Table II gives a comparison of the thermal conductivity of conductivity of aluminum, glass, plastics, and paper. Note that aluminum is about 850 to 1575 times more conductive than paper or plastics.

Convection

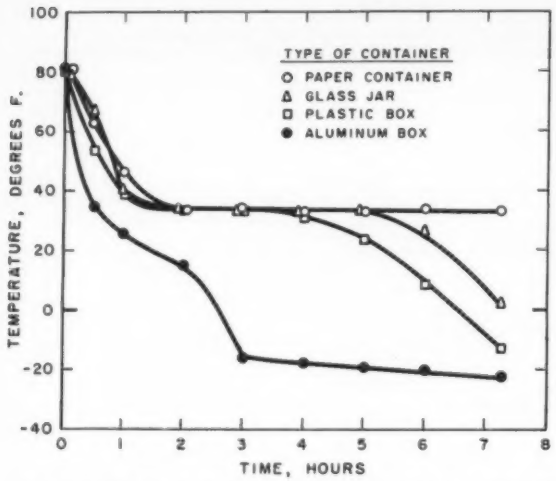
Heat transfer by convection rarely occurs without simultaneous heat transfer by radiation, although conditions may be such that convection plays the major role. For example, convection would be a major factor in the heat transfer between two highly reflective surfaces having different temperatures with forced circulation of air between them.

"U" Factors

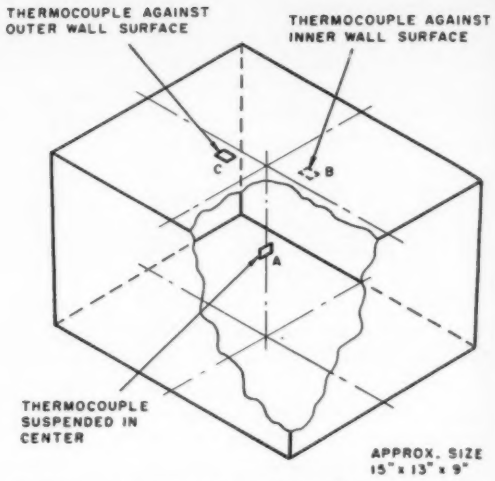
Heat transfer, in most cases, takes place by a combination of radiation, conduction, and convection. Their interrelationship is very complex. The "U" factor thus indicates total heat transmittance—the time rate of flow expressed in B.T.U.'s per hour per square foot per degree Fahrenheit temperature difference between the air on each side of the test material—as measured in a "guarded hot box" by a procedure such as described in ASTM C236-54T.

"U" factors for plain and foil-

2 FROZEN FOOD CONTAINERS tested for rate of cooling in home-type freezer. Each one contained 350 ml. of tap water.



3 FREEZING RATES of water in paper, glass, plastic, and aluminum containers. Water in aluminum box dropped 30° in 45 min.



4 ARRANGEMENT OF THERMOCOUPLES in corrugated boxes exposed to radiant heat from three infrared lamps.

laminated corrugated paperboard of the type used in our tests, and having structures similar to A and B in Fig. 1, appear in Table III. These data show that with foil on both sides of corrugated paperboard only 53 per cent as much heat is transmitted as compared with plain corrugated board.

TEST METHODS

Most of the tests with corrugated boxes took place as described below:

Plain corrugated—single-wall kraft paperboard facing sheets ranging from 33 to 90 lb./1000 sq. ft. (Fig. 1A).

Foil laminated corrugated—single-wall 0.00035-in. foil laminated to kraft paperboard facing sheet (Fig. 1B).

Double-wall corrugated—kraft-foil lamination buried within structure (Fig. 1C).

Samples with iron-constantan thermocouples attached were stored overnight in a refrigerator, freezer, or heated oven. The following morning the samples were put in the test containers, and the rise or fall in temperature was recorded over a period of hours using a direct temperature indicating potentiometer having an automatic cold-junction temperature compensator.

In the various tests, samples were exposed to room temperatures (80-86°F.); 100°F. in a room equipped with a blower to maintain good air circulation; on a laboratory table exposed to light from B4 photofloods (simulating noonday sunlight); and exposure to infrared heat lamps.

RESULTS

The following examples illustrate a number of specific situations where the high thermal reflectivity or heat conductivity of aluminum can be used advantageously in packaging.

Frozen Food Containers

Four types of frozen food containers were compared, as illustrated in Fig. 2, for rate of cooling in a home-type freezer. Exactly 350 ml. of tap water was added to each. After the water came to equilibrium at room temperature (80°F.), thermocouples were inserted, and the containers were placed in a household-type freezer. Fig. 3 shows temperature drop curves. The water in the aluminum container dropped to 30°F. in 45 min. as compared to about 4¼ hr. with the plastic container and 5½ hr. with the glass container. The water in the paper container had not dropped to this temperature when the test was terminated after 7¼ hr. Performance such as this can be used to advantage in various frozen food applications.

Radiant Heat Barrier

Four empty corrugated boxes (plain, foil inside, foil outside, foil both sides) with thermocouples placed as shown in Fig. 4 were sealed with gummed tape. Then they were subjected to radiant heat from a bank of three infrared lamps.

Temperature readings, presented graphically in Fig. 5, clearly show that (1) air in the plain box got warmer than air in any of the foil-lined boxes and (2) that foil on the outside was a more effective barrier than foil on the inside of the box.

Arvil B. McKee is a graduate of Grove City College with a B.S. degree in chemistry. From 1942 to 1945 he was associated with Du Pont in its ammonia department, Manhattan Project, and ordnance department. Joining Alcoa in 1945, he was in corrosion work in the chemical metallurgy division and later assistant chief of the foil and packaging division. Mr. McKee is past chairman of the Pittsburgh section of National Association of Corrosion Engineers and is a member of Institute of Food Technologists.

D. B. Strohm is a graduate of Philadelphia College of Pharmacy and Science. After working as chief chemical engineer for York Safe and Lock Co., he joined Alcoa in 1937 at its Edgewater, N.J. plant as supervising chemist for the packaging laboratory. In 1957 he was transferred to New Kensington where he assumed his present position.

Insulating Properties

Cold beer. Plain and foil-laminated (outside) RSC shippers, vented and nonvented, containing 24 cans of beer were chilled in a refrigerator for 24 hr. The samples with the thermocouples attached, as illustrated in Fig. 6, were removed and taken to a laboratory table, where the ambient temperature was 80°F, and subjected to heat from two B4 photofloods 4 ft. away.

Results (see Fig. 7) show a significant advantage for the foil-laminated cases over the plain, but only a slight advantage for the nonvented over the vented cases. Vented cases save about 10 per cent in corrugated board requirements per case.

Refrigerated salads. Plain double-wall corrugated boxes (used for packaging refrigerated salads and frozen desserts) were also compared with foil-laminated (inside and outside) boxes by periodically measuring the temperature rise of a jug of cold water sealed in each type of box when exposed to laboratory temperatures.

Results in Fig. 8 show the foil-laminated (outside) performed better than the plain box, and the foil-laminated (inside) performed the best. In a comparable test, a double-wall corrugated box having foil buried within the structure (as shown in Fig. 1C) performed no better than a box without foil.

TABLE II
Thermal Conductivities Of Several Packaging Materials

Material	BTU's/hr./sq.ft./°F./in. thickness
Aluminum	1416
Glass	3.6 to 7.2
Plastics	0.96 to 1.68
Paper	0.9

TABLE III
"U" Factors For Plain And Foil Laminated Corrugated Paperboards*

Material	BTU's/hr./sq.ft./°F.
Corrugated:	
Plain	0.53
Foil warm side	0.37
Foil both sides	0.28

*From private communication from Prof. E. R. McLaughlin, College of Engineering & Architecture, Pennsylvania State University.

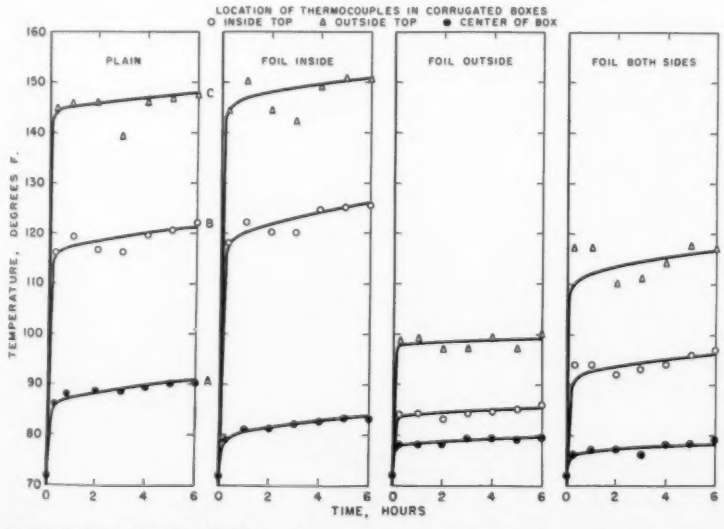
Frozen foods. The ability of aluminum foil to keep frozen foods cold was evaluated by placing 12 7-oz. waxed paperboard cartons having wax paper overwraps (containing a commercial product) in three types of corrugated boxes: plain, foil outside only, and foil on both sides. Thermocouples were attached, and the boxes were sealed and then stored in a freezer for three days prior to starting the test. Then the cases were removed. Half the samples were put in the 100°F. storage cabinet, and the balance were subjected to radiant heat from one B4 photoflood 3½ ft. away.

Results, appearing in Figs. 9 and 10, demonstrate the beneficial effect of the foil.

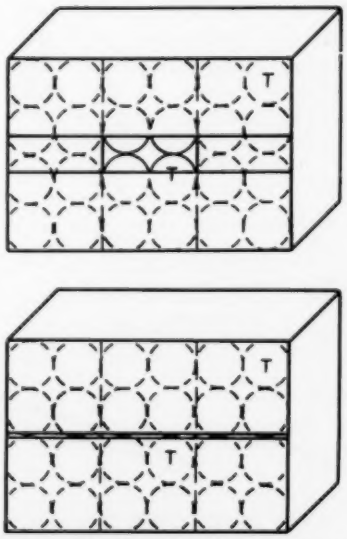
FINDINGS SUBSTANTIATED

Reports in the literature further substantiate our findings. For example, Aluminium Laboratories (Canada) compared commercial bushel baskets and wax-inner-lined/foil-outer-lined corrugated boxes for keeping fresh poultry cold during shipment to market, showing the foil-laminated boxes maintained a lower and more uniform temperature than the baskets which were being used commercially *(2)*.

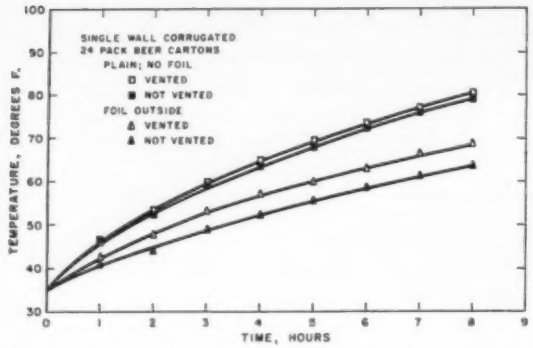
A 6-month service test made in 1956 showed that corrugated boxes—foil lined inside and out—successfully maintained low temperatures for long distance shipping of whole blood. Standard blood-shipping containers had to travel between blood banks within 24 hr. to avoid temperatures above 50°F. Foil-laminated corrugated boxes permitted a 25-per-cent increase in shipping time without exceeding



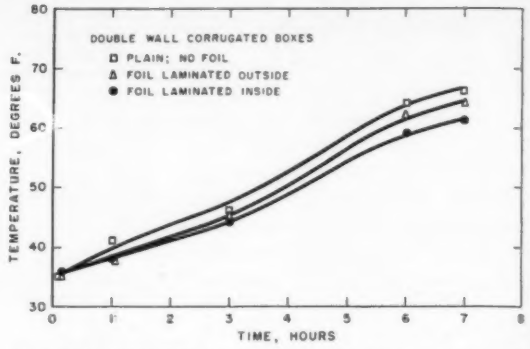
5 TEMPERATURE READINGS for thermocouples in box shown in Fig. 4 after exposure to radiant heat from infrared lamps. Results show that air in plain box got warmer than air in any of foil-lined boxes and that foil on outside was more effective than on inside.



6 CAN ARRANGEMENT and location of thermocouples for heat-rise test. Case is 16⅛x10¾x4⅞ in.; vent, 2½x7½ in.



7 FOIL-LAMINATED CASES show significant advantage over plain cases exposed to radiant heat from photoflood lamps.



8 FOIL-LAMINATED (inside) cases perform better than outside laminated or plain cases when exposed at room temperatures.

the safe temperature range of the product.

Purdue University's poultry science department compared the time required for the surface temperature of frozen chicken fryers to rise from 10°F. to 32°F. when held in boxes placed in a room at 68°F. In the foil-laminated box, it took 27 hr. as compared with 15¾ hr. in the waxed box with plain fibreboard top and 13 hr. in a polyethylene-laminated box *(3)*.

Results of tests which the University of Minnesota conducted to determine the influence of type of packaging material on keeping quality of ice cream showed that foil overwraps or foil laminated on the exterior of fibre containers was effective (1) in maintaining good body and texture and in preventing shrinkage of the ice cream during 4-5 weeks in commercial self-service cabinets; (2) in maintaining lower product temperatures during storage than waxed fibre cartons; and (3) in retarding the rate of temperature rise as compared to ice cream in a plain waxed fibre carton when exposed at room temperature *(4)*.

Other reports *(6, 7, 8)* cite new and expanding uses for foil-laminated containers utilizing aluminum's thermal reflectivity: e.g., for handling perishables, ready-to-eat meals, cold beverages, and other applications of this type.

COSTS

At present, the cost of one side foil-laminated corrugated is comparable to ordinary double-wall corrugated but significantly higher than plain single-wall corrugated. But as production volume of foil-laminated corrugated increases, costs may decrease and approach a more favorable relation to the cost of plain single-wall corrugated boxes.

Literature Cited

(1) Taylor, Cyril S. and Edwards, Junius D. "Some reflection and radiation characteristics of aluminum," *American Society of Heating and Ventilating Engineers Journal* 11:1, Jan. 1939, pp. 59-63.

(2) "Tests show foil slows thawing," *Canadian Packaging* 11:5, May 1958.

(3) Mitchell, J. David and Stadelman, W. J. "Freezing and thawing rates for poultry meat." Presented at 19th annual meeting of Institute of Food Technologists, May 1959.

(4) Packard, V. S., Thomas, E. L., and Combs, W. B. "Ice cream packaging for self-service merchandising." Taken from data presented in a thesis submitted to the graduate faculty of the University of Minnesota by V. S. Packard in partial fulfillment of requirements for the M.S. degree, 1956.

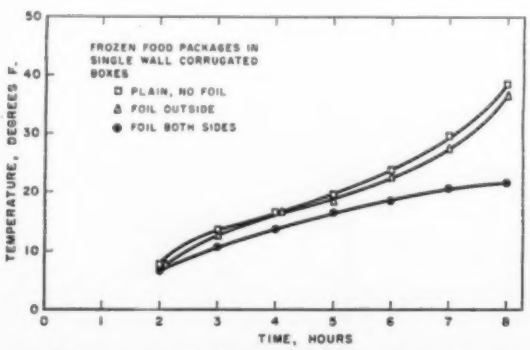
(5) "Sheet metals in packaging," *Sheet Metal Industries* 36:390, Oct. 1959.

(6) "Converter's showcase," *Modern Converter* Dec. 1959, p. 22.

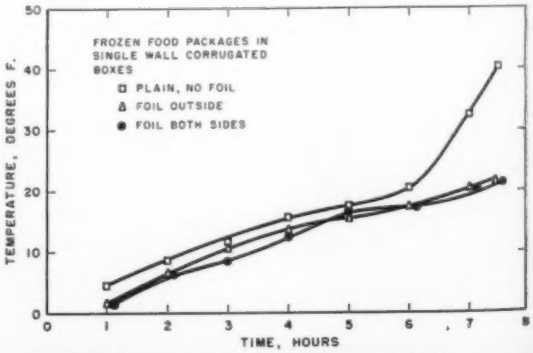
(7) "Trendicator," *Consumer Packaging* 27:11, Nov. 1959, p. 59; 28:2, Feb. 1960, p. 33.

(8) "Cozy posy packages," *Industrial Packaging* 2:7. July 15, 1956, p. 24.

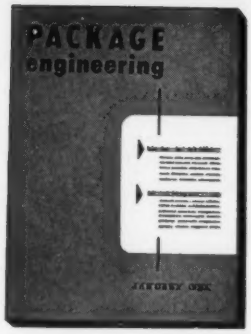
(End)



9 AT 100°F., cases with foil on both sides show marked advantage over plain cases and those with foil laminated outside.



10 EXPOSURE TO RADIANT HEAT shows foil-laminated cases (outside only or on both sides) superior to plain cases.



Exhibitors

THE PACKAGING MACHINERY MANUFACTURERS INSTITUTE SHOW OF 1961

EXHIBITOR	BOOTH	HOTEL
A-B-C Packaging Machine Corp.	445	Statler-Hilton
Abbott Plastic Machine Corp.	243	
A & M Tool & Die Co., Saga Packaging Machinery Div.	616	
Algene Marking Equipment Co.	237	
Allen Hollander Co., Inc.	704	Statler-Hilton
Aluminum Co. of America	530	
Amaco, Inc.	945	Statler-Hilton
American Engineering & Design Corp.	146	
America Engraving & Machine Co.	158	Statler-Hilton
American Sterilizer Co.	852	Statler-Hilton
American Viscose Corp.	247	Sheraton-Cadillac
Amsco Packaging Machinery, Inc.	611	Pick-Fort Shelby
Anderson Bros. Manufacturing Co.	836	
Apex Machine Co.	148	
The Arabol Manufacturing Co.	829	Detroit-Leland
Applied Developments Inc. of Texas	752	
Arenco Machine Co., Inc.	518	Statler-Hilton
Armed Forces, U.S. Air Force	962	
Atlas-Vac Machine Corp.	736	Pick-Fort Shelby
Automation	134	Statler-Hilton
Avery Label Corp.	953	
AviSun Corp.	629	Statler-Hilton
Barkley & Dexter Inc.	201	Sheraton-Cadillac
Bartelt Engineering Co., Inc.	500	Sheraton-Cadillac
Battle Creek Packaging Machines, Inc.	620	Detroit-Leland
Bell-Mark Corp.	216	Sheraton-Cadillac
Bemis Bro. Bag Co.	709	
Better Packages, Inc.	227	Sheraton-Cadillac
Biner Ellison Manufacturing Co.	838	Sheraton-Cadillac
Bivans Corp.	433	Prince Edward
Stephen Bodolay Inc.	906	
Bowers Pattern Works	145	Tower
Brown Filling Machine Co., Inc.	221	Sheraton-Cadillac
Burt Machine Co.	811	
John Burton Machine Corp.	800	
Cameron Machine Co.	621	Cadillac House
Chain Belt Co.	150	
Chase Equipment Co.	840	Statler-Hilton
Cherrin Products Co.	224	
Chisholm-Ryder Co. of Pennsylvania	648	Statler-Hilton
C.I.T. Corp.	934	Detroit-Leland
The Clark-Aiken Co.	410	Statler-Hilton
Cleveland-Detroit Corp.	139	Statler-Hilton
Climax Products Div., The Lodge & Shipley Co.	438	Statler-Hilton
Clybourn Machine Corp.	233	Detroit-Leland
Colt Packaging Machinery Co.	710	
Arthur Colton Co.	325	Statler-Hilton
Comet Industries, Inc.	946	
Conapac Corp.	406	Sheraton-Cadillac
Consolidated Packaging Machinery Corp.	436	Sheraton-Cadillac
Container Equipment Corp.	728	Statler-Hilton
Continental Can Co.	239	
Crompton & Knowles Packaging Corp., Redington and Wrap-King Divs.	521	Statler-Hilton
Crown Zellerbach Corp., Western-Waxide Div.	926	Cadillac House
Cryovac Div., W. R. Grace & Co.	615	Cadillac House
Delavan Manufacturing Co.	441	Sheraton-Cadillac
Delta Engineering Corp.	646	Statler-Hilton
Dennison Manufacturing Co.	832	Sheraton-Cadillac
Derby Sealers Div., Minnesota Mining & Mfg. Co.	545	Harlan House
Dispens-A-Label Devices	964	
The Dobeckmun Co.	835	Statler-Hilton
Doughboy Industries, Inc.	737	Cadillac House
E. I. du Pont de Nemours & Co. (Inc.) Cel-O-Seal Div.	923	Sheraton-Cadillac
Film Dept.	921	Sheraton-Cadillac
John Dusenbery Co., Inc.	635	
Economic Machinery Co., Div. of Geo. J. Meyer Mfg. Co.	418	Statler-Hilton
Ekco-Alcoa Containers, Inc.	323	
Electronic Machine Parts, Inc.	700	Sheraton-Cadillac
Electric Processes Corp.	910	
Elgin Manufacturing Co.	639	Statler-Hilton
Elliott Manufacturing Co.	749	Pick-Fort Shelby
Emhart Manufacturing Co., Portland Div.	330	
Errich International Corp.	701	Statler-Hilton
Ertel Engineering Corp.	932	Statler-Hilton
European Packaging Digest, French Packaging Institute	708	
The Exact Weight Scale Co.	220	Pick-Fort Shelby
Ex-Cell-O Corp. (formerly E. G. Staude Mfg. Co.)	535	Statler-Hilton
Fairchild's, Inc.	804	
Faustel, Inc.	754	
Felins Tying Machine Co.	105	Statler-Hilton
Ferguson Machine Co.	109	
Fife Manufacturing Co.	114	Balmar
The Filler Machine Co., Inc.	534	
The F. G. Findley Co.	342	Detroit-Leland
Dave Fischbein Co.	730	Sheraton-Cadillac
Food & Drug Packaging	213	Sheraton-Cadillac
FMC Corp.	605	Statler-Hilton
Canning Machinery Div.	624	Statler-Hilton
Fr. Hesser	437	
George H. Fry Co.	346	Pick-Fort Shelby
H. B. Fuller Co.	748	
General Atronics Corp.	240	
General Corrugated Machinery Co.	916	
General Electric Co.	212	
General Food Equipment, Co.	952	Statler-Hilton
General Packaging Equipment Co.	230	Statler-Hilton
Gisholt Machine Co.	250	
Adolph Gottscho, Inc.	519	Sheraton-Cadillac
Griffin-Rutgers, Inc.	117	
Hansella Machinery Corp.	839	
Hayssen Manufacturing Co.	319	
Haywood Publishing Co., Consumer Packaging, Industrial Packaging	720	Detroit-Leland

EXHIBITOR	BOOTH	HOTEL
Heinrich Equipment Corp.	440	Statler-Hilton
Hi-Speed Checkweigher Co., Inc.	729	Statler-Hilton
Hobbs Manufacturing Co.	138	Pick-Fort Shelby
Horix Manufacturing Co.	632	Statler-Hilton
Huntingdon Industries, Inc.	538	Pick-Fort Shelby
Illumitronic Systems Corp.	944	
Inta-Roto Machine Co., Inc.	823	Sheraton-Cadillac
Island Equipment Corp.	627	
Ivers-Lee Co.	600	Statler-Hilton
R. A. Jones & Co. Inc.	508	Sheraton-Cadillac
Oscar I. Judelshon, Inc.	104	Cadillac House
The Kartridg Pak Co.	124	
Kidder Press Co. Inc.	217	Statler-Hilton
The Karl Kiefer Machine Co.	816	Thunderbird
Kordite Co.	337	
Labelette Co.	744	Statler-Hilton
The Lakso Co., Inc.	446	Statler-Hilton
Lectromatic Devices Inc.	929	
Liquid Film Corp.	900	
Long & Co., Inc.	920	
Lynch Corp.	425	Statler-Hilton
MA System	760	
Machinery Service Co., Inc.	418	
Marathon, A Div. of American Can Co.	340	
Markem Machine Co.	335	
Marsh Stencil Machine Co.	732	Cadillac House
G. Diehl Mateer Co.	341	
Mead Packaging, Div. of The Mead Corp.	909	Statler-Hilton
Mercury Heat Sealing Equipment Co.	155	Pick-Fort Shelby
Merrill Machinery Sales Co.	236	
Mettler Instrument Co.	936	
Michigan State University	842	
Miller Hydro Co.	315	Sheraton-Cadillac
Miller Wrapping & Sealing Machine Co.	717	Balmar
Milprint Inc.	819	Sheraton-Cadillac
Mira-Pak, Inc.	130	Detroit-Leland
Modern Packaging	226	Statler-Hilton
The Monarch Marking System Co.	222	Thunderbird
Morningstar-Paisley, Inc.	108	
Mosstype Corp.	211	Sheraton-Cadillac
MRM Co., Inc.	514	Wolverine
J. M. Nash Co., Inc.	806	
National Equipment Corp.	925	Statler-Hilton
National Flexible Packaging Association	912	
National Starch and Chemical Corp.	725	Sheraton-Cadillac
The Nevins Co.	826	Statler-Hilton
New Jersey Machine Corp.	435	Sheraton-Cadillac
Olin Packaging Div.	Registration Area	Statler-Hilton
Oliver Machinery Co.	541	Balmar
The Olofsson Corp.	705	Statler-Hilton
PACKAGE ENGINEERING	339	Statler-Hilton
Package Machinery Co.	528	Sheraton-Cadillac
Packaging Industries Ltd., Inc.	640	Statler-Hilton
Packaging Institute, Inc.	154	
Pak-Rapid Inc.	706	Pick-Fort Shelby
Pamarco Inc.	338	
Paper Converting Machine Co.	817	Detroit-Leland
Peacock Business Press, Inc., American Boxmaker, American Paper Merchant, Paper, Film, and Foil Converter	112	
Perry Industries, Inc.	141	
Peters Machinery Co.	515	
Plast-O-Craft, Co., Inc.	157	Pick-Fort Shelby
Pneumatic Scale Corp.	334	Sheraton-Cadillac
Popper & Sons, Inc.	120	Pick-Fort Shelby
Potdevin Machine Co.	522	Sheraton-Cadillac
Pratt Manufacturing Corp.	149	Statler-Hilton
Progressive Machinery Co., Div. of Pioneer Decorating Co., Inc.	110	
Pyroxylin Products, Inc.	928	Pick-Fort Shelby
Angus J. Ray Publishing Co. PACKAGE ENGINEERING	339	Statler-Hilton
Resina Automatic Machinery Co., Inc.	333	Sheraton-Cadillac
Reynolds Metals Co.	905	
Riegel Paper Corp.	610	Sheraton-Cadillac
Scale Specialties Inc.	246	
Scandia Packaging Machinery Co.	511	Statler-Hilton
R. P. Scherer Corp.	159	
G. T. Schjeldahl Co.	801	Statler-Hilton
Schooler Manufacturing Co.	100	
Schroeder Machines Corp.	807	Cadillac House
St. Regis Paper Co.	743	Statler-Hilton
Shopsin Paper Co.	102	Pick-Fort Shelby
Simplatrol Products Corp.	140	
Smico, Inc.	810	Statler-Hilton
Soabar Co.	943	The Elmwood Casino & Motor Hotel
Southern Adhesives Corp.	342	
Stanford Engineering Co.	636	Statler-Hilton
Stein, Hall & Co., Inc.	142	Pick-Fort Shelby
H. L. Stoker Co.	848	
Sundstrand-American Broach Div., Sundstrand Corp.	223	Sheraton-Cadillac
Swift & Co.	937	Sheraton-Cadillac
Textile Machine Works	827	Statler-Hilton
Toledo Scale	913	
Tompkins' Label Service	606	Sheraton-Cadillac
Triangle Package Machinery Co.	619	Statler-Hilton
Tronomatic Machine Mfg. Corp.	113	
Union Bag-Camp Paper Corp.	309	Statler-Hilton
Union Paste Co.	342	
United Shoe Machinery Corp.	822	Cadillac House
U.S. Automatic Box Machinery Co.	414	Statler-Hilton
U.S. Bottlers Machinery Co.	234	Sheraton-Cadillac
U.S. Steel Supply Div., U.S. Steel Corp.	846	
USI Robodyne, Div. of U.S. Industries, Inc.	244	
Van Buren Machine Corp.	941	
Van Buskirk & Co., Inc.	107	Pick-Fort Shelby
B. Verner & Co., Inc.	147	
Vertrod Corp.	205	Sheraton-Cadillac
Warner Electric Brake & Clutch Co.	153	Statler-Hilton
H. G. Weber & Co., Inc.	209	Sheraton-Cadillac
Weldotron Corp.	714	
Wirth-Rhodes Corp.	752	Statler-Hilton
Wolverine Paper Converting Machine Co.	208	
The Woodman Co., Inc.	815	Statler-Hilton
Wrap-Ade Machine Co., Inc.	206	Statler-Hilton
Wright Machinery Co.	507	Statler-Hilton

Here are the hotels and motels where exhibitors are staying

Balmar Motel
3250 E. Jefferson
567 5700

Cadillac House Motel
500 W. Congress
WOodward 3-2777

Detroit-Leland
Cass and Bagley Aves.
WOodward 2-2300

Elmwood Casino and Motor Hotel
Dougall Rd., Windsor, Ont.
WOodward 5-6877

Harlen House Motel
6500 John C. Lodge Expressway
TRinity 4-0700

Pick-Fort Shelby
Lafayette Blvd. and 1st St.
WOodward 3-7100

Prince Edward
384 Ouellette Ave., Windsor, Ont.
CLearwater 3-2481

Sheraton-Cadillac
Washington Blvd. and Michigan Ave.
WOodward 1-8000

Statler-Hilton
Grand Circus Park and Washington Blvd.
WOodward 3-6000

Thunderbird Motel
1365 W. Fort St.
WOodward 5-5044

Tower Motel
165 Sibley
WOodward 3-1120

Wolverine
55 E. Elizabeth
WOodward 3-9000

PMMI's first forum—

"Planned maintenance—the tool of modern management"

Package Machinery Manufacturers Institute is holding its first forum at Cobo Hall, Detroit, Mich., November 8-9. The theme of the two-day forum is "Planned maintenance—the tool of modern management."

On Wednesday, November 8, the conference will run from 9 a.m. until 12 noon in Room 2001. The speakers and topics are:

"Welcome to PMMI's first forum"—Richard Wellbrock, vice president-sales, New Jersey Machine Corp., Hoboken, N.J.
How the PMMI show becomes the initiation ground for discussion on maintenance practices and new opportunities for user-supplier cooperation.

"Preventive maintenance pays!"—Edward W. Brennglass, president, Packaging Corp. of America, Los Angeles
The contract packager, working against a low bid and a tight shipping promise, furnishes a particularly good example of a company that cannot afford machinery breakdowns.

"Do the machinery folks understand?"—G. Douglas Reed, vice president, manufacturing, McCormick & Co., Inc., Baltimore
He wonders if machine designers and service engineers of companies that make packaging machinery are aware of all the design and instruction opportunities which reduce maintenance effort and expense for the user.

"As the machine man sees it"—Louis J. Rouleau, field service representative, Economic Machinery Co., Worcester, Mass.
A machinery representative's observations of weaknesses and abuses in maintenance activities, based on on-the-firing-line experience, suggest useful pointers to management.

"What the technical institute offers"—H. Russell Beatty, president, Wentworth Institute, Boston
Classroom and shop training in the rudiments of automatic flow, mechanical motion, electronic controls, etc., give mechanics background and understanding which is helpful in handling effective maintenance procedures for complicated machinery.

"The role of the engineering college"—Cornelius Wandmacher, dean, College of Engineering, University of Cincinnati
The principles of management and engineering which underlie sound organization of individual responsibilities, competent execution of plans, harnessing of skills, and comprehension of complex equipment and processes can be a basis for the upgrading of maintenance management and leadership.

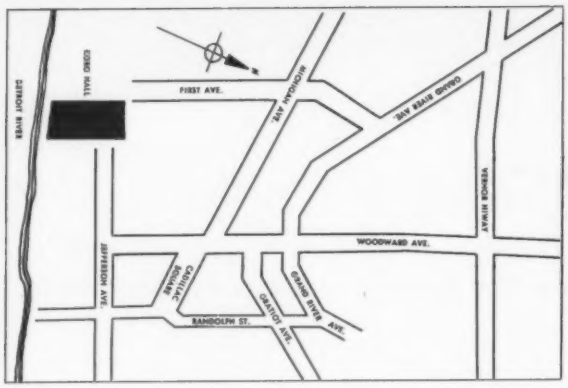
On Thursday, November 9, discussion groups will meet in Rooms 3035, 3042, 3043, 3044, and 3045 from 9:30 a.m. until 12 noon. Roving moderators, under the direction of K. M. Peterson, Pneumatic Scale Corp., Quincy, Mass., will lead the discussions on the following topics:

"Communications" — Moderator: Walter Jacquemin, product engineer, The Pillsbury Co., Hamilton, Ohio
Focusing on the parts catalog—its proper use and where and when it is needed; how to get the most value from the installation engineer; procedures for the training of personnel.

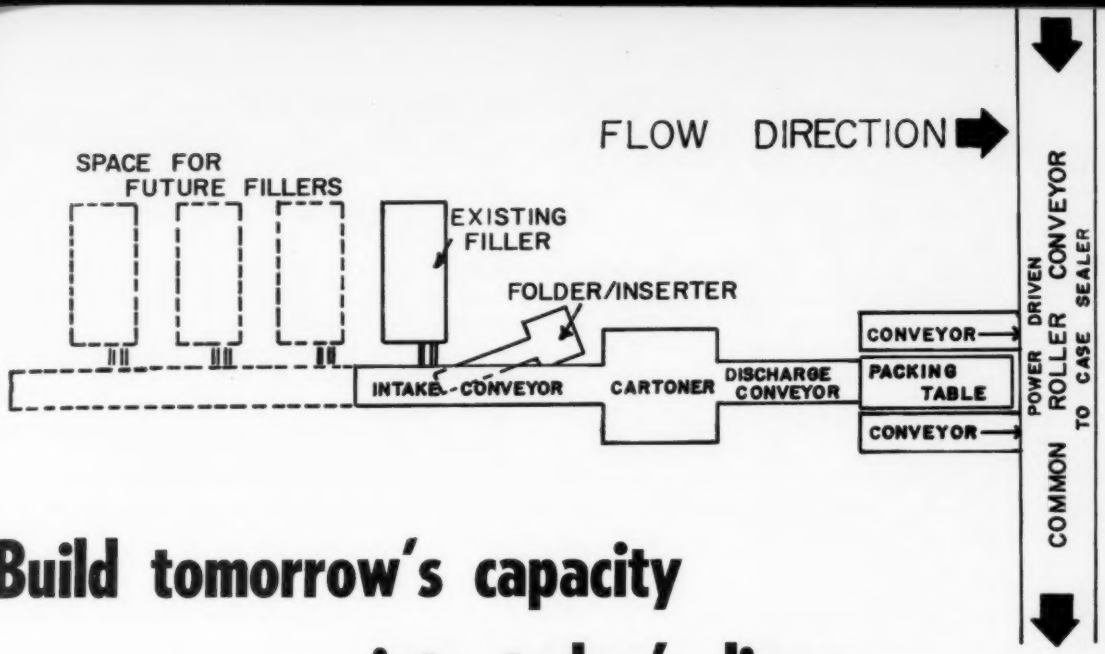
"Maintenance features in machinery"—Moderator: Norman Yaeger, central engineering, Colgate-Palmolive Co., New York City
Looking at the importance of accessibility and the type of lubrication systems preferred; (does the user want adjustments with which to make changeovers?); as well as selection of machine materials for ease of maintenance.

"Adjusting the material, not the machine"—Moderator: John S. Stokes, installation and service manager, FMC Corp., Stokes & Smith Plant, Philadelphia
The importance of the right adhesive or properly broken and riffled cartons, for example, comes in for discussion as well as machine interruptions caused by handling of incoming supplies or their storage.

"A packaged plan for effective machinery maintenance"—Moderator: Glenn R. Engel, Jr., field sales manager, Cryovac Div., W. R. Grace & Co., Woburn, Mass.
Scheduling machinery maintenance to prevent breakdowns during production runs, changeover procedures and responsibility for preparing equipment for each production run, lubrication and part replacement stress the need of planned maintenance. *(End)*



ABOUT 220 MANUFACTURERS of packaging machinery and related products, publishers, and service firms will occupy nearly 100,000 sq. ft. of Cobo Hall, Detroit, for their exhibits. A booth-by-booth description of these exhibits begins on Page 123.



Build tomorrow's capacity into today's lines

By Robert W. Clark, Jr.
Plant Manager
Thos. Leeming & Co., Inc. and Pacquin, Inc.
Parsipanny, New Jersey

Developing and installing a new packaging line calls for long-range planning. Designing one only to meet immediate needs is not enough. Our experience in developing new lines has led us to form some basic rules to follow when planning a new line. They are:

1. Get the best and most efficient equipment possible, but only what we can pay off in less than three years.
2. Mechanize as much as possible.
3. Lay out the line for 95 per cent efficiency.
4. Have reserve capacity in the equipment as far as is practicable. These rules help us simplify the engineering of additional lines.

THREE-YEAR PAY-OFF

Our main goal is to mechanize as much as possible and expand our production facilities as our needs grow. But we must pay off all equipment costs within three years. When we first start planning a new line, we keep this requirement in mind.

Consider Specific Needs

When considering capital expenditures for equipment, we look at our specific requirements. We want the best facilities, but we let cost factors, labor usage, and sales forecasts guide us. In most instances, we go ahead with the development, *if* we can pay off the equipment within our set period —three years.

As an example, we recently installed a new collapsible tube filling line. It consists of an Arenco Type GAB tube filler/closer and a Crompton & Knowles' Redington Carton-King automatic cartoner. The rated speed of the filler is 120 tubes/min., but that of the cartoner is 500/min.

Why did we get a cartoner with a speed four times that of the filler? *(Turn page)*

Don't mechanize just enough to meet current needs when you design a new packaging line; plan for the long pull and build future capacity into the lines you lay out today. Mr. Clark thinks this is economically feasible, pointing out that his company has a policy of paying off all equipment costs within a three-year period. Giving some basic rules for line planning, he tells how these rules applied to a recently installed tube filling line which his company will pay off in two and one-half years.

In 1956, when we first set up our tube packaging operation, we started with one Arenco filler with a speed of 40 tubes/min. Cartoning was a hand operation. This line required one filler operator and eight people to place the filled tubes and circulars into cartons. (This crew of nine did not include case packing.)

Later we added a Redington Automax cartoner. This semiautomatic line used a total of five people and turned out production at the same speed as before. We reduced costs here but not as much as we wanted to. As our needs increased, we added another line identical to the first one. This doubled our packaging rate (to 80 tubes/min.), but it also doubled the number of operators.

When To Invest In New Line

Our business volume later outgrew the maximum capacity of the two lines. However, we needed only to increase speed from 80 to 110 tubes/min. The only way to get more production from the old lines was to run them longer. Our constant search for ways to reduce production costs and raise efficiency prompted us to think about a new line.

Also, predictions for the future, based on past growth, showed us we had to plan for much higher speeds than we could get by merely adding more low-speed semiautomatic machines—just to take care of the immediate future. The answer was to invest in a new line.

Look To Distant Future

We could have bought a cartoner with a speed to match the filler and paid it off well within our three-year limit. This would have taken care of our immediate needs. However, sales forecasts showed us that soon we would need still more production.

Looking well into the future, we found that we could get our new line for an investment we can pay off within two and one-half years. Then, for a small additional investment in another filler, we can double our present speed (the cartoner already has the additional capacity), and we can easily pay off the filler cost in our set pay-off period. Since the cartoner runs at 500/min. and each filler at 120/min., we can easily add up to three more fillers (see line drawing).

The four carton sizes we presently run on our new line range from those for small physicians' samples to a size 1-9/16x1-1/16x 4-3/4 in. If we want to go to a larger size in the future, we have the flexibility to do so. The filler will take tubes up to 4 oz. The cartoner will handle a carton for this large a tube; in fact, it will run a carton as large as 3x3x8 in.

Raises Efficiency

Running at 110 tubes/min., our new line requires a total of four operators: one for the filler, one for the cartoner, and two for packing the filled cartons into display cases and corrugated shipping cases. Comparing the number of operators here with that formerly needed on our two old lines shows an efficiency increase of over 240 per cent.

Also, for our old lines, we bought circulars (we put one into every carton for all products) folded three times (making eight panels). Then an operator folded them again the short direction. Because of the size of the circular and weight of the paper (16-lb. Mohawk opaque, caliper 0.003 to 0.004 in.), the girl had to use a hammer (rather ridiculous) to crease the fold sufficiently. Thus, this became a full-time job for one person.

Circulars Cost Less

The new line has equipment, as part of the cartoner, which folds and inserts these circulars automatically. Now we need no operator for this job. Also, we buy the circulars flat for a cost of about half that of buying them folded.

The efficiency increase of 240 per cent plus the saving in circular costs gives us an estimated saving of about $0.01/tube packaged on the new line as compared to the two old lines. Based on present business volume, this saving will pay for the new line in two and one-half years.

PLAN TO MECHANIZE

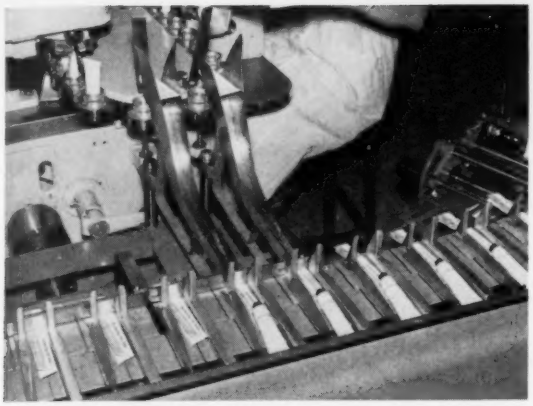
Another basic point is that whenever we engineer a new line, we plan to mechanize as much as is economically feasible. Also, we work out the engineering details with the equipment manufacturers. We tell them what we want and find out what it will cost. Then, if it fits into our pay-off period, we include these details in the original purchase.

Use Automatic Tube Transfer

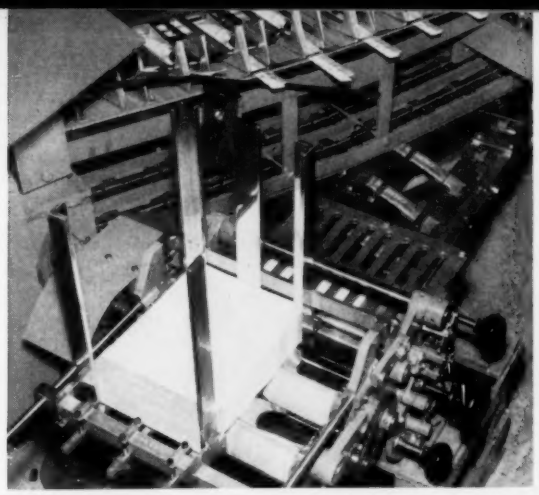
As an example, many automatic cartoners require hand feeding of the product to the intake conveyor. We definitely did not want this for our new line if it was economical to do it automatically. The manufacturer worked out a means of joining the filler and cartoner with an automatic transfer device. The extra cost for this fits into our two-and-one-half-year pay-off period.

This transfer mechanism (see Fig. 1) consists of two troughs which slope vertically downward much like the familiar playground slide. The lower ends of the troughs curve almost to the hori-

Robert W. Clark, Jr. is a graduate of Yale University with a B.S. degree in industrial administration. After graduation he joined Scovill Manufacturing Co. and was foreman of its brass rolling mills and later head of the engineering division. After four years as head of his own manufacturing firm, Mr. Clark joined Pacquin in 1950 as plant manager. In 1954 he also became plant manager at Leeming. He is an associate member of the Packaging Institute and a member of PI's Eastern production line committee. He also belongs to American Management Association.



1 AUTOMATIC TUBE TRANSFER is example of nearly complete mechanization of new tube filling line. Cost was extra, but company can pay it off within established three-year pay-off period.



2 FOLDING/INSERTING EQUIPMENT for printed circulars not only folds and inserts but adds crosswise creases to minimize tendency to twist when stationary guide folds circular over tube.

zontal and meet the cartoner product intake conveyor at right angles. The open top end of each trough fits at the discharge end of the filler.

In operation, two finished tubes discharge simultaneously from the filler conveyor, one into each of the troughs. Sliding down bottom (clipped end) first, a tube reaches the bottom curve of the trough and tends to slow down. Then, it passes gently into a pocket on the cartoner intake conveyor.

Machines On Common Drive

This transfer operation is completely automatic. It runs smoothly and in time with the cartoner and filler. The reason for this is that the two machines are on a common drive: the cartoner runs the filler and the transfer mechanism. Thus, a pair of filled tubes enter the pair of transfer troughs at just the right moment to slide into two adjacent cartoner intake pockets.

Another reason for the smooth transfer is the motion of the troughs. They pivot back and forth so that their lower ends, spaced the same distance apart as the cartoner intake conveyor pockets, move a short distance *with* the pockets on the continuous-motion conveyor. During this short time the tubes pass from the troughs to the pockets.

If this mechanism had been too costly to pay off within our set period, we would not have included it in our original purchase. For example, on one of our lines we use five girls to insert dispenser tubes in large glass bottles. A machine to do this job automatically costs around $30,000. Our volume is not large enough to pay off this cost within our three-year period, so we keep on using the manual operation.

Problem With Circulars

Another example of mechanizing is the automatic folding and inserting of circulars on our new line. This presented a problem because we insist that the product name face out when the circular is folded over the tube. Here again, we worked out the details with the manufacturer, then considered the cost and decided to include it in our original purchase.

This was the particular problem: the name of the product—Thermodent, Calmitol, Manimagic, or Pacquin's—printed on the circular must face outward when the folded circular is over the capped end of the tube. Copy layout on our circulars is such that folding and inserting equipment discharges the folded circular with the product name facing upward.

For this reason, the folder attachment on our new cartoner is located (see Fig. 2) so that it feeds the folded circulars into the empty cartoner conveyor pockets as they return on the underside of the cartoner conveyor. Then, when the pockets travel around to the upper side of the frame, ready to receive filled tubes, the product name is facing downward—toward the pocket bottom.

Takes Up Little Space

Incidentally, the folder discharge conveyor meets the cartoner pocket conveyor at a very acute angle. Thus, the folding equipment is almost under the cartoner conveyor. This gives us better utilization of floor space.

Positioning of the folder in this manner does not hinder positive transfer of circulars to the cartoner pockets. Two lugs on the folder discharge conveyor chain carry the folded circulars forward. These lugs are staggered so that the long dimension of the circulars is parallel to the length of the cartoner pockets. Not only does the folder conveyor carry the circulars forward in time with the cartoner conveyor (the cartoner powers the folder), but the outward lug on the folder conveyor chain forces the circular into the cartoner pocket because of the acute angle positioning.

Normally, when a folded circular is being doubled over the end of a tube prior to loading into the empty carton, the end that is doubled tends to twist a little, caused by friction between the

3 FEEDING EMPTY TUBES to new filler is simple. Operator places them on slanting troughs, tubes roll down to mechanism which indexes them to conveyor pockets.

circular and the stationary folding guide on the cartoner (see Fig. 2). With some circulars, this might not be a problem. But, our heavyweight circulars are difficult to fold over (we used to "hammer" them) and tend to twist more than usual.

To minimize this twisting and to smooth out the operation, the folding equipment puts two creases about 1/2 in. apart across the center of the folded circular. These creases cause the circular to double easily over the tube. This feature of the folding equipment cuts down on possible jams and makes the cartoner operator's job that much easier.

LINE EFFICIENCY

We expect our lines to operate at 95 per cent efficiency so we plan our layout with this in mind. We have a common roller conveyor along one side and running the full length of our packaging room. This conveyor leads to the case sealing station where one operator seals all cases from all lines on an automatic case sealer. For this reason we must position all of our lines perpendicular to this conveyor. This is the only relationship one line has with any of the others.

When laying out a new line, we let product types govern where the line goes. We run products of the same type on adjacent lines —hand cream lines together, liquid lines together, tube filling lines together.

Utilization Of Space

Although we are always in need of space, we do not jam a line into a tight corner. We always allow space for a lift truck between lines —usually about 10 ft.

With this much space around our lines, the operators have easy access to get supplies to the lines, and they have plenty of room in which to work freely. The mechanics can get to the equipment easily to make emergency repairs and also do proper maintenance.

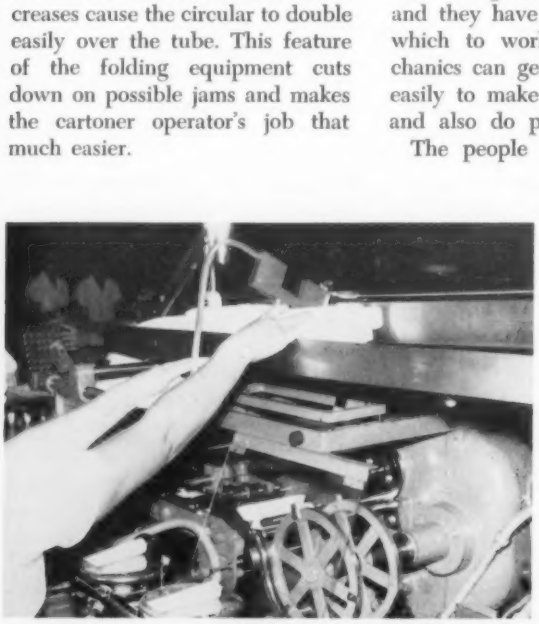
The people are not stumbling over one another or over hazardous obstacles. They can get to the machines easily and work safely with no hindrances. All of this pays off in a fast, efficient operation and in good personnel morale.

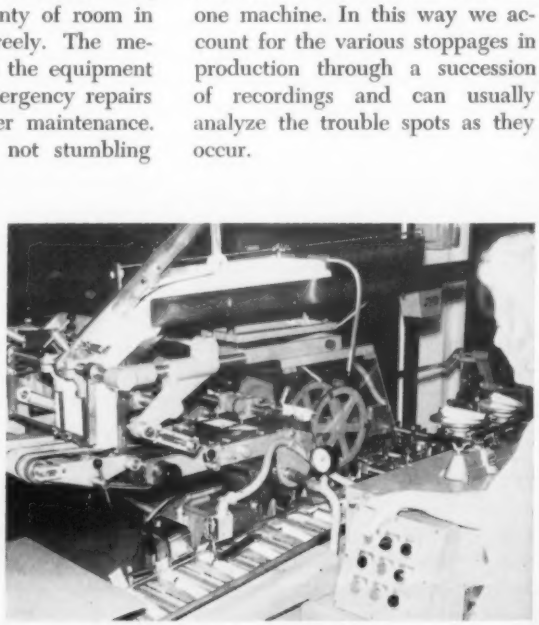
Record Downtime

After a newly installed line is ready to go, we start out slowly and increase the speed up to the normal high which will give us 95 per cent operating efficiency. Each of our lines has a meter, a Gorrell & Gorrell bar chart recorder, which shows how much the line is down during a given period.

This machine is connected through transformers to the electrical circuit of each production line and, in turn, registers the amount of downtime on the line, which is shown by any stoppages in electric current flowing through the transformer. At the end of each day a supervisor checks his downtime chart and records the reasons for each downtime period.

For the sake of accuracy, we do this as soon as possible. If we want the downtime of any special machine, the supervisor wires that machine's motor to the recorder and records the downtime for that one machine. In this way we account for the various stoppages in production through a succession of recordings and can usually analyze the trouble spots as they occur.





4 ATTENDING NEW CARTONER, operator keeps empty carton magazine filled (left), knows how to start and stop machine (right), and removes occasional jam. Old low-speed semiautomatic lines required two girls to insert circulars and tubes into pockets, then load them into cartons.

When efficiency goes below 95 per cent, we make a study of the line to see where the trouble is. If necessary, we add extra people until we get any bugs out. We may change people around until we find just the right ones to do given jobs the best.

Most of our operators are quite versatile. They can do most of the jobs, but some operators may have a knack for some jobs more than others. Here is where they are most satisfied and most efficient. In other words, we do all we can to get the right operator for the job.

New Line Easy To Run

When we started our new automatic tube filling line, we had no problem introducing it to the operators. They took to it right away. Since the girls used the old semiautomatic filler and cartoner, the principles of the new equipment were no mystery to them. It was easy for them to take over the new machines.

For instance, feeding empty tubes to the new filler (see Fig. 3) is similar to that for the old filler but much simpler. Now the operator just places the tubes on sloping infeed troughs. The tubes slide down the troughs and automatically index into the filler conveyor pockets.

Also, the operator does not have to orient printing on the tubes because electric eyes on the filler do this automatically before the tubes are sealed. On the old filler she had to insert each tube into a pocket and orient the printing. She runs this filler at 110 tubes/min.; the old one ran at 40/min.

Operating the new cartoner is simple (see Fig. 4). The attendant has only to watch the machine, keep the carton magazine filled, and know which buttons stop and start the machine. She may clear an occasional jam.

With the old semiautomatic cartoners, one girl placed folded circulars into the product pockets. Another placed a filled tube on each circular, then tripped a lever to load the products into empty cartons. Getting a speed of 40 tubes/min. kept them moving.

New Problems For Mechanics

Although no appreciable amount of training was necessary for the operators in taking over the new line, it created new problems for the mechanics. The more automatic a machine is, the more problems. Thus, the mechanics need more training.

Our mechanics learn a new machine in about six weeks. They do this from the machinery manuals and the manufacturer's service engineers. They also learn by "doing" when something goes wrong (see Fig. 5).

Installing new equipment usually means adding mechanics. We use an apprentice system. As an apprentice learns, he takes over some maintenance and trouble-shooting on the less automatic machinery. This lets the more experienced mechanics move on to the more complicated, newer machinery.

Adds To Supervisor's Job

Our new line is changing the supervisor's job. A well-operating automatic machine requires less supervision than older semiautomatic equipment. The new line needs less people to operate it. Thus, the supervisor has fewer personnel problems.

But the new line is an added burden since it requires more technical knowledge on the supervisor's part. He must be well-versed on the machines. He must know all about their operation and be able to help the operators when needed. To do this, he must learn through the instruction manuals and service engineers.

We suggest to our supervisors that they study the details of each machine thoroughly so they in turn will know as quickly as possible the kind of trouble involved and what is required to fix it. Also the supervisor who can diagnose the trouble or stay by the breakdown until the cause is found is in a much better position to solve future problems.

We also feel it essential that each supervisor get a certain amount of outside training at some engineering college. We emphasize this very highly to the supervisor and hope that he will spend as much of his own time as possible learning the various elements of his job.

Our supervisors are mostly those who have come up through the ranks. They know our products. They are technically qualified to supervise our older lines. Thus, although the new line requires additional knowledge on their part, they find no real difficulty in acquiring and using it.

RESERVE CAPACITY

Finally, we have learned that having reserve capacity in equipment is a must. Recalling the growth of our packaging operations proves this to us.

In just five years, we have added new equipment piece by piece. Most of it was to meet the needs at the time, but we soon realized the need of looking well into the future.

We have found that this is not economically impractical. In fact, we usually find that it is more economical to have reserve capacity as long as we can pay off the equipment costs within our three-year pay-off period. *(End)*

5 MECHANICS learn how to maintain and service new machines in about six weeks. They study instruction and service manuals, and learn by doing—e.g., mechanic above raises hold-down bar to clear jam.

Some box users overspecify minor details yet miss key points. Having yours just right lets you get the most from your corrugated box dollar

Hold your box specs on target

By A. H. McKinlay, *Packaging Engineer*
Packaging Development, Manufacturing Services
General Electric Company, Schenectady

Specifications for corrugated boxes and box fillers and enforcement of these specs through a good quality control testing program assure you of better and more uniform quality material and construction. You may eventually find that you can reduce the grade of the board needed to do a given job.

When buying corrugated boxes, if you are not specifying more than burst strength, dimensions, and printing, you may be getting variations between suppliers of from 50 to 100 per cent in box strength. And you may be using some boxes of higher-than-necessary burst strength to cover the lowest quality received.

Editor's note: To have good corrugated box specifications, you must demand certain requirements the box must meet. A discussion of ten of the most important factors to investigate before writing a specification appears in James J. Solomon's article, "How to develop workable packaging specifications," PACKAGE ENGINEERING 5:10, August 1960, p. 33.

Don't Neglect Box Strength

A common practice of specifying corrugated boxes today consists of a drawing with details of style and dimensions, burst strength, inserts, and printing requirements. Often the user pays considerable attention to color, placement of printing, or dimension but almost ignores board strength or box construction.

For the last two items, a general practice is to simply refer to the requirements of Rule 41 of the *Consolidated* or *Uniform Freight Classifications*. The problem here is that Rule 41 calls for only a burst or Mullen test as a measure of strength (puncture test on triple wall) and mentions only the manufacturer's joint as a construction requirement for slotted boxes.

Users frequently neglect scoring, slotting, printing crush, and dimension tolerances—all quite important to both strength and appearance of a corrugated box. As a measure of board strength, the burst test is far short of fulfilling its goal. Box strength needs much more detailed

Well-rounded corrugated box specifications include more than just a list of exact dimensions and tolerances, according to Mr. McKinlay. He urges close attention to adequate board strength, proper box fabrication, and systematically making sure incoming boxes are up to standards. His illustrations show other box users how they can fit GE specifications to their own particular needs.

(Company Name)

Material Specification: CORRUGATED BOARD

Code XYZ

Company material XYZ identifies corrugated board for use as shipping containers and filler piece material as follows:

XYZ 1—125 lb./sq. in.*	XYZ 5—350 lb./sq. in.*
XYZ 2—175 lb./sq. in.*	XYZ 6—500 lb./sq. in.*
XYZ 3—200 lb./sq. in.*	XYZ 7—600 lb./sq. in.*
XYZ 4—275 lb./sq. in.*	XYZ 8—1100 in.-oz./in.†

For complete company designation see table of properties.

MANUFACTURE

Construction. Material may be furnished in the form of double-face (single-wall), double-wall, or triple-wall board, as required to meet the specified properties. These specifications should not be construed as superseding or abridging the minimum requirements called for in carrier regulations.

Flute. Flute construction shall be used as indicated. A-flute shall be approximately 0.180 in. high, 36 to the foot; B-flute shall be approximately 0.100 in. high, 51 to the foot; C-flute shall be approximately 0.140 in. high, 39 to 42 to the foot.

Liner. Liners shall be Fourdrinier kraft unless otherwise specified. All liners shall be firmly glued to the corrugating medium throughout the entire area of contact without excess adhesive.

REFEREE METHODS

Conditioning—ASTM D641
Puncture—ASTM D781
Thickness—ASTM D645
Combined weight—ASTM D646
Column crush—G.E. No. E-1-B-43‡
Burst strength—Use Cady or Mullen motor-driven tester with diaphragm capable of being distended to height of 3/8 in. above diaphragm plate by a pressure of 23 to 30 lb.

Firmly clamp plate above diaphragm down onto the material to prevent slipping. If material slips during test, disregard results. Make test from inside and outside. Double pop tests should be disregarded if below minimum value.

Make six burst tests, three from each side of the board. Only one burst test is permitted to fall below the minimum test required. Accept board if, in a retest consisting of 24 burst tests (12 from each side of the board), not over four tests fall below the minimum test required.

*Burst strength. †Puncture strength.
‡McKinlay, A. H. "Modified column-crush test for corrugated boxes," PACKAGE ENGINEERING, 5:10, Oct. 1960, pp, 68-69.

PROPERTIES (Numerical values are minimums)

Company Designation	Burst Strength (lb./sq. in.)	Flute	Puncture Strength (in.-oz./in. tear)	Thickness (in.)	Combined Weight (lb./sq. ft.)*	Column Crush (lb./in.)
XYZ 1A	125	A	140	0.190	0.095	24
XYZ 1B	125	B	126	0.110	0.090	24
XYZ 1C	125	C	133	0.150	0.093	24
XYZ 2A	175	A	195	0.196	0.118	32
XYZ 2B	175	B	175	0.116	0.113	32
XYZ 2C	175	C	185	0.156	0.116	32
XYZ 3A	200	A	215	0.198	0.127	35
XYZ 3B	200	B	193	0.118	0.122	35
XYZ 3C	200	C	204	0.158	0.125	35
XYZ 3AB	200	AB	250	0.293	0.173	60
XYZ 3AC	200	AC	262	0.333	0.176	60
XYZ 3BB	200	BB	225	0.213	0.168	60
XYZ 3CB	200	CB	237	0.253	0.171	60
XYZ 3CC	200	CC	250	0.293	0.173	60
XYZ 4A	275	A	310	0.212	0.181	55
XYZ 4B	275	B	279	0.132	0.176	55
XYZ 4C	275	C	294	0.172	0.179	55
XYZ 4AB	275	AB	350	0.300	0.191	65
XYZ 4AC	275	AC	367	0.340	0.194	65
XYZ 4BB	275	BB	315	0.220	0.186	65
XYZ 4CB	275	CB	332	0.260	0.189	65
XYZ 4CC	275	CC	350	0.300	0.191	65
XYZ 5A	350	A	375	0.221	0.223	70
XYZ 5B	350	B	337	0.141	0.218	70
XYZ 5C	350	C	356	0.181	0.221	70
XYZ 5AB	350	AB	425	0.306	0.207	70
XYZ 5AC	350	AC	446	0.346	0.210	70
XYZ 5BB	350	BB	382	0.226	0.202	70
XYZ 5CB	350	CB	404	0.266	0.205	70
XYZ 5CC	350	CC	425	0.306	0.207	70
XYZ 6AB	500	AB	600	0.328	0.303	90
XYZ 6AC	500	AC	630	0.368	0.306	90
XYZ 6BB	500	BB	540	0.248	0.298	90
XYZ 6CB	500	CB	570	0.288	0.301	90
XYZ 6CC	500	CC	600	0.328	0.303	90
XYZ 7AB	600	AB	700	0.340	0.351	100
XYZ 7AC	600	AC	735	0.380	0.354	100
XYZ 7BB	600	BB	630	0.260	0.346	100
XYZ 7CB	600	CB	665	0.300	0.349	100
XYZ 7CC	600	CC	700	0.340	0.351	100
XYZ 8AAC	—	AAC	1100	0.560	0.391	130

*Values listed are based on liner weight minimums set forth in ***Consolidated*** and ***Uniform Freight Classifications,*** plus weight of the fluted corrugated medium and adhesive. Table is based on 26-lb. corrugating medium and starch adhesive. If other materials are used, appropriate values must be substituted (e.g., add 0.008 for silicate adhesive).

(Company Name)

Construction Specification **Code MNO**

CORRUGATED SHIPPING CONTAINERS AND FILLER PIECES

This specification identifies corrugated shipping containers and filler pieces. It covers the details of quality, workmanship, etc., of faced corrugated boards, fabricated in the form of shipping containers, pads, filler pieces, etc., which are in addition to any special requirements which may accompany specific orders.

MATERIAL

Corrugated board from which these containers and filler pieces are made shall conform to company specifications, Code XYZ.

STYLE OF CONTAINERS

The style of containers and the designating numbers thereof shall be as shown in the handbook, Corrugated and solid fibre shipping containers, as standardized and issued by the Fibre Box Association according to its latest published issue.

MANUFACTURE

Scoring. "Three-point" rotary scoring is required on all container flaps. The material and scoring must permit bending all flaps completely back against the outer face of the box without breaking the liner as follows:

For single-wall boxes—5 times
For double-wall boxes—3 times
For triple-wall boxes—2 times

Scoring must be deep enough to be plainly marked on both the inner and outer liners before the material is folded, so as to permit folding the material accurately along the score lines and to impart maximum compression strength to the container.

Slotting. All slotting and cutting must be clean, free of ragged edges, and without materially crushing of corrugations. Slots must be of proper depth to permit flaps being closed without bulging or leaving holes at the corners.

Manufacturer's joint. Construction of the manufacturer's joint of boxes must comply with Rule 41 of the Consolidated and Uniform Freight Classifications.

Taped joints. When the box is flat, the distance between the edges of the panels to which the tape is affixed shall not be less than 1/3 nor more than 2/3 of the thickness of the board. Tape must be located over the joint of the box with a variation of not more than 1/4 in. in vertical alignment for 3-in.-wide tape, and 1/8 in. for 2- or 2 1/2-in.-wide tape. The top and bottom of the tape must be within 3/16 in. from the center of the score line. All tape used on containers will be of the width and grade specified on individual drawings of containers.

PRINTING

Must be of high-grade nonsmudging ink, subject to the specification for the individual items. Crushing of corrugations from the printing process shall not exceed the following thickness reductions from the unprinted to printed areas.

A-flute—0.015 in.
B-flute—0.011 in.
C-flute—0.013 in.
Double wall—0.020 in.
Triple-wall—0.025 in.

Printing designs shall be in accord with detailed specifications submitted.

BOXMAKER'S CERTIFICATE

The boxmaker's certificate shall be printed on the container in conformance with Section 9, Rule 41 of the Consolidated and Uniform Freight Classifications. The certificate must be put on one of the outer bottom flaps when the size of the box permits; otherwise it may be placed on any face except that the certificate must not be placed on the same face with a company logo. The boxmaker's certificate shall not be put on any box the dimensions of which exceed the limits as given in Rule 41, except on specific instructions from the department ordering the same.

DIMENSIONS

The dimensions of boxes given in the detailed list will be inside dimensions and will be given in the order of length, width, and depth. The dimensions of scored filler pieces will be center-to-center of score, unless the outside dimensions after folding are indicated on the individual specification. When complete packages are ordered from any one supplier, comprising the outer container, filler pieces, etc., it shall be the obligation of the vendor to make sure that all interior pieces fit properly into the container.

All container dimensions shall be within the limits of ±1/16 in. and all filler piece dimensions within ±1/32 in.

The inner flaps of square regular-slotted boxes and of special-slotted boxes (box manufacturer's No. 2), and the outer flaps of all boxes shall be so designed that the same will meet but not overlap when the flaps are closed without bulging of the sides.

OVERSHIPMENT

A variation of 10 per cent over or under will be accepted on orders for quantities of 5,000 or less, and 5 per cent over or under on larger quantities. On all orders calling for boxes with interior parts making up a complete pack, the number of pieces delivered on each item must balance to make up complete sets.

REFEREE METHODS

Measurement of inside dimensions of corrugated boxes—Packaging Institute's proposed standard method (Union box gauge).

SAMPLE APPROVAL

Submission of a sample and the approval thereof does not relieve the manufacturer from any responsibility for failure in quality, workmanship, or proper fit of the material supplied in filling orders. All material shall conform to the foregoing specification unless agreed upon otherwise between the purchaser and the manufacturer.

PACKING AND MARKING

Shipping containers, fillers, etc., shall be bundled by the vendor in such quantities that the weight of a bundle will not exceed 40 lb. Each bundle shall have the purchase order number and the identification number of the material marked on the bundle.

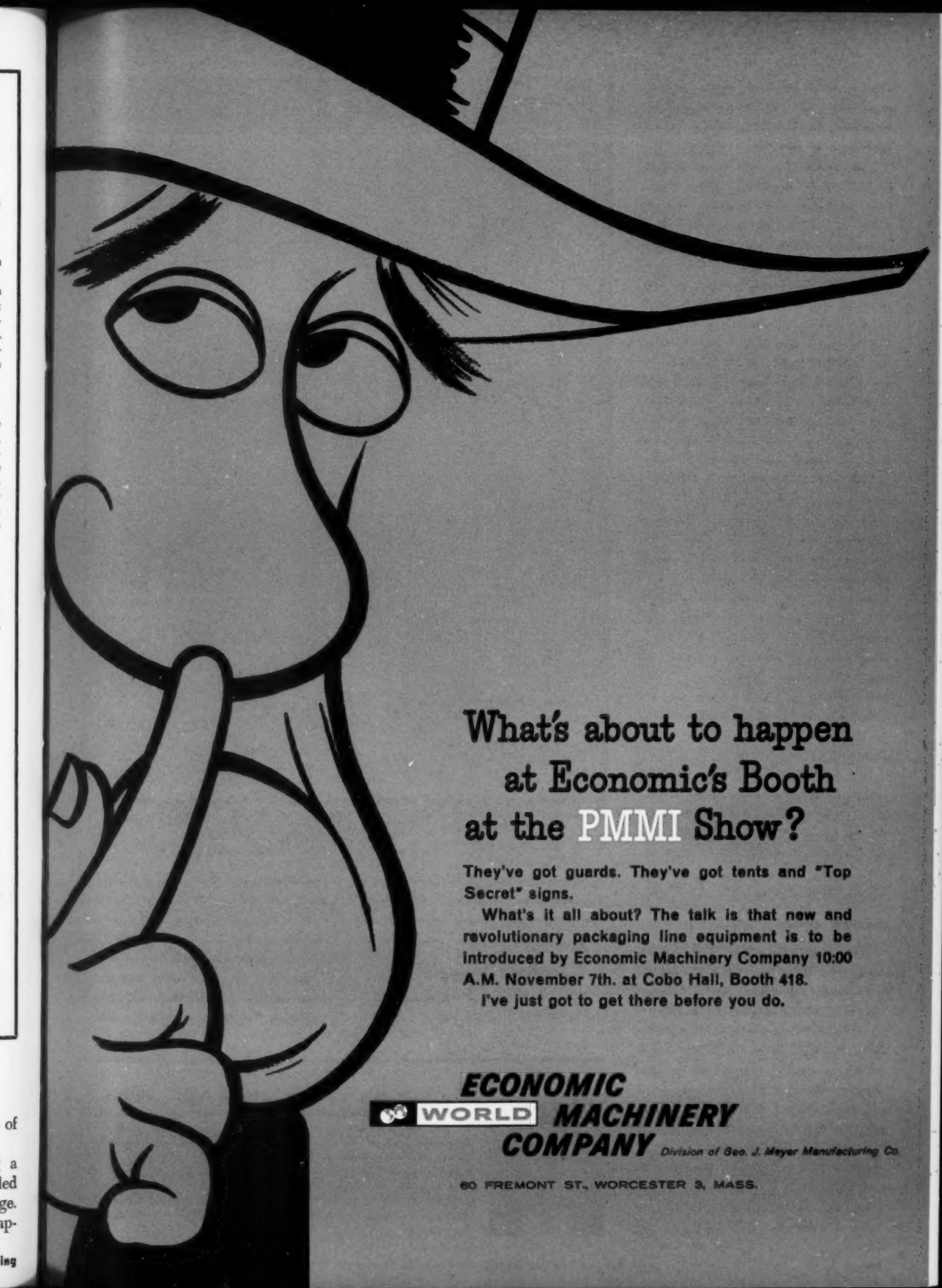
2 **RECOMMENDED GENERAL SPECIFICATION** for corrugated shipping containers and filler pieces has requirements for scoring, slotting, manufacturer's joint, printing impression, etc.

specification and control of requirements.

Use Dual General Specs

For more than 15 years, we have used a system of dual general specifications with good results. (Figs. 1 and 2 show our dual specs slightly modified so that you may adapt them to your particular situation.) Our company standards group issues these general specs, which show all items that all packages of the same type must meet.

Then, the department using a specific package prepares detailed drawings (Fig. 3) for that package. These drawings show items ap-



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What's it all about? The talk is that new and revolutionary packaging line equipment is to be introduced by Economic Machinery Company 10:00 A.M. November 7th. at Cobo Hall, Booth 418.

I've just got to get there before you do.

ECONOMIC WORLD MACHINERY COMPANY *Division of Geo. J. Meyer Manufacturing Co.*

60 FREMONT ST., WORCESTER 3, MASS.

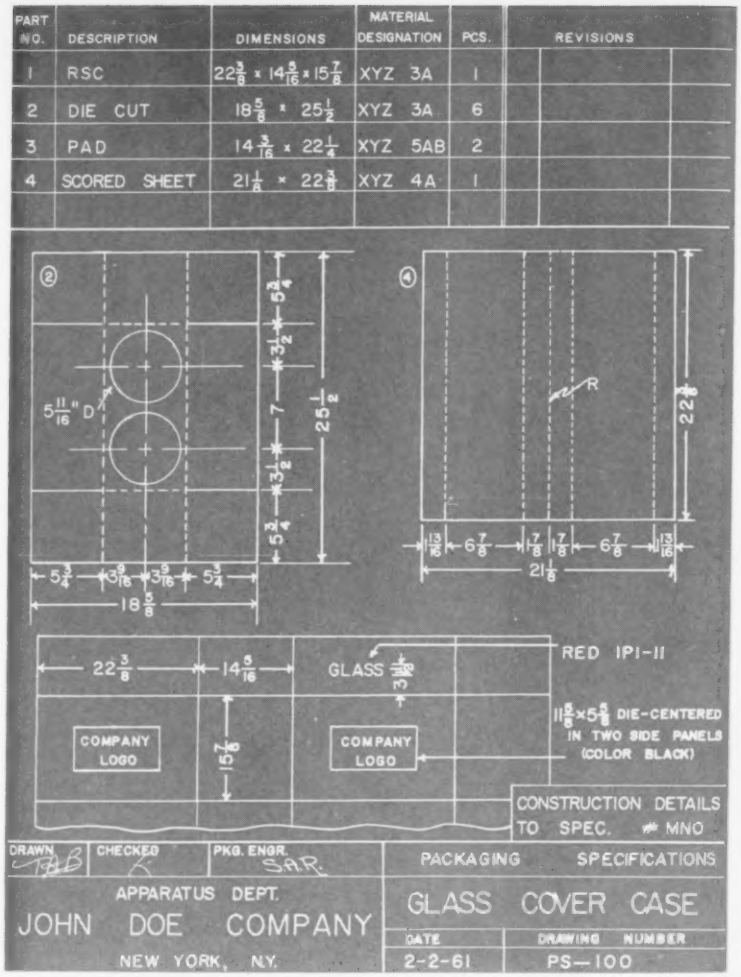
plying only to that package and gives references to the general specifications for items common to all packages of the same type.

This method results in a simplified detailed drawing, since it refers to only two general specs. Also, it eliminates repeating the "common" items on all drawings for many packages.

Usually, we send a copy of the general specifications to each new vendor, who uses it for reference. For instance, our meter department in Somersworth, N.H. binds its corrugated packaging specifications in a looseleaf notebook. Each corrugated box supplier receives one of these books containing the two general specs and all of the detailed drawings of parts it currently supplies to that department.

The packaging engineer, Michael Jacobsen, and quality control inspectors at the meter department also have copies. They check boxes from each lot, using the simple tests such as slotting, printing, manufacturer's joint, and weight. They send samples from random lots to our Schenectady packaging laboratory, where we use laboratory instruments to conduct such tests as puncture, column crush, and thickness.

Recently we revised the two general specifications to include up-to-date tests and specifications used by the corrugated box industry and its customers. These tests and requirements cover our range of uses of corrugated boxes.



3 **CORRUGATED PACKAGE SPECIFICATION** references both general specifications for strength and construction details. Note: all parts are conveniently listed on one sheet.

BOARD SPEC

Board specification (Fig. 1) includes tests for puncture, thickness, combined weight, and column crush, as well as burst. Values listed in this spec are based on Fourdrinier kraft liners, 26-lb. semichemical corrugating medium, and starch adhesive. These are the most commonly used today and generally give the best performance.

When one of our packaging engineers wants other materials, he specifies them on the order. However, we advise our people to consider all factors. For example, although jute liners may meet all test requirements, their additional weight boosts gross weight and may increase shipping costs.

Burst Strength

Basically this test measures tearing resistance of paper at a slowly applied rate. For this reason, it does not relate closely to the end use of a corrugated box. It was designed to measure paper and textiles—not corrugated boxboard.

Since it was the only test available in the early 1900's when corrugated board first came into use,

A. H. McKinley is a graduate of Union College with a degree in industrial administration. He has completed graduate work in mathematics and is a graduate of several GE engineering and management courses. After three years as a packaging engineer at Alco Products, Inc., he joined GE's packaging laboratory as a packaging engineer seven years ago. Mr. McKinlay is a member of American Society for Testing Materials and is chairman of the Industry Advisory Committee on Corrugated Container Research, which is sponsored by Forest Products Laboratory.

5 beautiful ways Kodacel Sheet helps "sell-on-sight"

Look at the products illustrated. Each totally different, each with sales problems surprisingly similar. "Give us packaging," the manufacturers told J-E Plastics, "transparent, color-true packaging that will show our merchandise at its best—get shoppers to stop, look and buy; packaging that will protect our goods from dust, dirt and fingering, ensure longer shelf-life!"

7½ gauge Kodacel Sheet was the answer—tough, durable—clear as water—easy, economical to handle.

For further information call our representative or write **EASTMAN KODAK COMPANY, Plastic Sheeting Division, Rochester 4, N. Y.**

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Sales Offices: *New York, Chicago, Atlanta.* Sales Representatives: *Cleveland, Philadelphia, Providence.* Distributors: *San Francisco, Los Angeles, Portland, Seattle (Wilson & Geo. Meyer & Co.); Toronto, Montreal (Paper Sales, Ltd.)*

Kodacel SHEET

"Kodacel" is a trademark for Eastman's plastic sheet.

Quality Tests Of Corrugated Boxes And Fillers
RATING STANDARDS

I. Board fabrication (standard refers to table in spec Code XYZ).
- A. Weight.
  - "A" and "B"—standard to +5 per cent of standard.
  - "C"—below standard or more than 5 per cent greater than standard.
- B. Thickness.
  - "A"—+5 per cent or better than standard.
  - "B"—standard to +5 per cent.
  - "C"—below standard.
- C. Puncture (same as thickness).
- D. Column crush (same as thickness).
- E. Burst (same as thickness).

II. Box construction (standard refers to spec Code MNO).
- A. Scoring.
  - "A"—bend test: 10 times or more on single-wall; 6 times or more on double-wall; 3 times or more on triple-wall without breaking liner.
  - "B"—bend test: 5 to 10 times on single-wall; 3 to 6 times on double-wall; 2 times on triple-wall.
  - "C"—bend test: less than above standards.
- B. Slotting.
  - "A"—bottom of slot within 1/17 in. of center of female flap score; neat and clean cuts all the way.
  - "B"—bottom of slot within 3/16 in. of center of female flap score; clean cuts on side but ragged on bottom.
  - "C"—not meeting above requirements or ending outside of female flap scores.
- C. Edges.
  - "A"—clean cut edges with slight crush at edge and glue bond intact to within 1/16 in. of edge.
  - "B"—same as "A" except to within 3/16 in. of edge.
  - "C"—not meeting above standards.

III. Manufacturer's joint (standard refers to spec Code MNO).
- A. Taped.
  - 1. Adhesion.
    - "A"—smoothly applied and well bonded.
    - "B"—slightly wrinkled or bubbled but well bonded.
    - "C"—not meeting above standards.
  - 2. Alignment.
    - "A"—within 1/8 in. vertical alignment on 3-in. tape and 1/16 in. on 2½-in. tape; within 1/16 in. of center of flap scorelines.
    - "B"—within ¼ in. vertical alignment on 3-in. tape and ⅛ in. on 2½-in. tape; within 3/16 in. of center of flap scorelines.
    - "C"—not meeting above standards.
  - 3. Gap between panels.
    - "A"—one half thickness of board ±5 per cent.
    - "B"—between 1/3 and 2/3 thickness of board.
    - "C"—not meeting above standards.
- B. Stitched.
  - 1. Spacing.
    - "A" and "B"—strict adherence to Rule 41 with first and last staples no more than ½ in. from center of flap scores and as near center of stitched flap as possible.
    - "C"—not meeting above standards.
- C. Glued.
  - "A"—a bond stronger than the board with a neat appearance, proper flap length, and easy flexing.
  - "B"—slight deviation from above standard excepting the bond.
  - "C"—not meeting above standards.

IV. Printing (standard refers to spec Code MNO).
- A. Placement.
  - "A"—within 1/16 in. of correct center or as specified.
  - "B"—within ⅛ in. of correct center or as specified.
  - "C"—not meeting above standards.
- B. Coverage.
  - "A"—full and even on close inspection at 3 ft.
  - "B"—full and even on close inspection at 6 ft.
  - "C"—not meeting above standards.
- C. Sharpness.
  - "A"—no splatterings and sharp type print on close inspection at 3 ft.
  - "B"—same as "A" at 6 ft.
  - "C"—not meeting above standards.
- D. Printing crush.
  - "A"—not exceeding 20 per cent less than standard.
  - "B"—not exceeding standard.
  - "C"—exceeding standard.
- E. Color.
  - "A" and "B"—within specified limits.
  - "C"—not meeting above standards.

V. Dimensions (standard refers to spec Code MNO).
- A. Squareness.
  - "A"—box squares up to ±1/32 in. of specified dimensions or ±1/64 in. on fillers.
  - "B"—box squares up to within ±1/16 in. of specified dimensions or ±1/32 in. on fillers.
  - "C"—not meeting above standards.
- B. Flaps.
  - "A"—outer flaps gently butt at center or meet ½ in. above folded inner flap with no abnormal pressures being applied.
  - "B"—outer flaps gently butt or are within 1/16 in. of meeting at center with no abnormal pressures being applied.
  - "C"—not meeting above standards.

VI. General (standard refers to spec Code MNO).
- A. Bundling.
  - "A"—tied with proper tension, correct number per bundle, and properly identified.
  - "B"—not quite up to "A," yet no material damage.
  - "C"—not meeting above standards.

4 QUALITY RATING standard sheet aids inspectors in checking purchased corrugated materials. "A" is superior quality, "B" is standard or somewhat better quality, "C" is below.

the railroads adopted it as a measure of corrugated box strength. Rule 41 still specifies it. For this reason, and because it commonly serves to describe different grades of board, we retain it in our specifications.

Puncture Strength

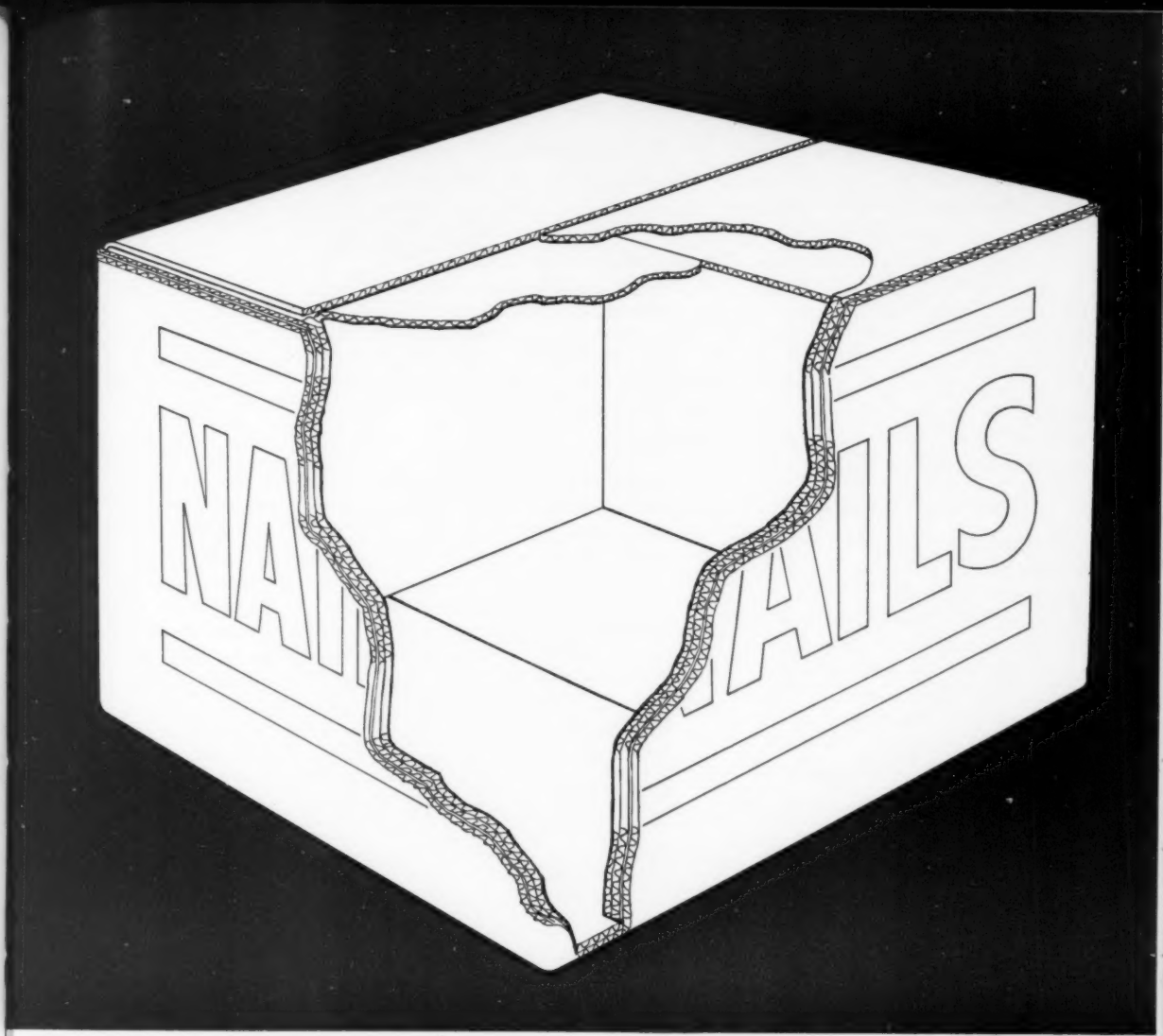
Measuring dynamic tear strength and stiffness, this test relates more closely to the rough handling properties of a box. Board with puncture test results lower than those specified is of substandard quality due to poor liner adhesion, loose liners, crushed corrugations, underweight liners, and similar defects.

In addition to the procedure outlined in ASTM D-781, eight readings should be taken to determine average results. The test should be conducted only on unscored, uncut, and unprinted areas.

Thickness

Thickness of combined corrugated board is important when you need stacking strength, since compression is a function of crushing resistance and stiffness. In turn, stiffness is a function of the thickness cubed (t^3).

Usually, lower thickness readings are due to worn corrugated rolls, poor flute formation, or crushed



International Paper's new "triple-wall" nail box sets new standards of strength and handling ease

THE new way to package nails is in this unique one-piece corrugated container, designed by International Paper. Its size, shape and triple-wall construction give it stability and stacking strength needed for safe handling and shipping.

That's just part of the story. This remarkable new box is also compact, inexpensive and easy to pack . . . easy to open on the job. Add to this the fact that it can be printed—*in color*—with brand name and selling message and you'll quickly see why the corrugated container has virtually replaced the wooden keg in just a few short years.

To date, this container has primarily been used for nails. It can easily be adapted to other dense products.

Whether yours is a small, heavy product or light and fragile, it will pay you to talk to your packaging expert from International Paper—*your most dependable source of supply.*

INTERNATIONAL PAPER

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corrugations. The minimum thicknesses shown in Fig. 1 are for nonprinted areas.

Combined Weight

We include this test because it is a rapid way for our receiving departments to check incoming material against the boxmaker's certificate. Low weight indicates incorrect or underweight liners.

Excessive weight may mean substitution of jute for kraft liners. And jute boosts gross weight and may increase shipping costs.

Column Crush Strength

The column crush strength (*4*) of corrugated board has a direct correlation with the stacking of the container. Specifying column crush minimums assures high compression strength boxboard. Used in conjunction with the box strength calculator (*3*), these crush values predict approximate stacking strength of the finished container.

CONSTRUCTION SPEC

Box construction specification (Fig. 2) contains requirements for scoring, slotting, manufacturer's joint, printing impression, boxmaker's certificate location, and dimensional tolerances.

Tests Are Simple

Tests and requirements of this specification are generally simple. The only instruments you need are a ruler, a caliper, and the Union box gauge for measuring inside dimensions.

Tolerances on the inside dimensions, especially 1/32 in. on filler pieces, may seem too stringent. In some applications they are necessary, particularly when you get fillers and boxes from different suppliers. When we purchase all components of a package from a single vendor, we usually waive this tolerance in favor of notifying the vendor that "all interior pieces fit properly into the container."

QUALITY CONTROL CHECK

Even complete specifications do not guarantee quality without a systematic checking of the incoming material against quality standards. You must impress your suppliers with the fact that you will reject material not meeting specification.

Some of our departments check all materials, others check on a random basis, and still others check only when they suspect substandard quality. Some have their own testing equipment, others send samples to Schenectady.

An outstanding example of quality control on incoming board and boxes (*1*) is at our lamp department in Cleveland. E. B. Candell, packaging laboratory supervisor there, has checked each lot of incoming boxes for years. He can show any vendor positive proof when its quality is deteriorating.

Rating Standard

As a means of rating a given lot of boxes, we recommend our packaging engineers use a rating standards sheet and report form. (Figs. 4 and 5* respectively show these forms, modified slightly so that you

Quality Report On Corrugated Shipping Containers And Fillers

Supplier _____ Date _____ Order No. _____

Size _____ Flute _____ Company Pack No. _____

	Rating "A"	Rating "B"	Rating "C"	Comments	Reference
Board fabrication					
Weight					XYZ
Thickness					XYZ
Puncture					XYZ
Column crush					XYZ
Burst					XYZ
Box and filler construction					
Scoring					MNO
Slotting					MNO
Edges					MNO
Manufacturer's joint					
Taped: adhesion					
alignment					MNO
panel gap					MNO
Stitched: spacing					Rule 41
clinching					
Glued					
Printing					
Placement					
Coverage					
Sharpness					
Printing crush					MNO
Color					
Dimensions					
Squareness					MNO
Flaps					MNO
General					
Bundling					MNO
***TOTALS**					

*Any time a "C" rating appears twice or more on this form, the boxes should be analyzed further to determine whether or not they will be accepted for use. However, a single "C" rating can be cause for refusal, depending on the severity of the rating and the test involved.

5 REPORT FORM tabulates results of inspector's quality check, simplifies making decisions on material. It also quickly shows which materials should be further analyzed.

*Our thanks to Ray Thelen of Oscar Mayer & Co., Madison, Wis. for allowing us to enlarge on his rating standard sheet, which he uses in his quality control program.—A. H. McK.

LIST OF TEST EQUIPMENT

Test	Equipment	Supplier
Puncture	Beach (G.E.) puncture tester	Testing Machines, Inc.
Thickness	Micrometer with 8-lb. dead load; capacity—0.5 to 0.001-in divisions	Testing Machines, Inc. or E. J. Cady and Co.
Weight	1-lb. scale with 0.001-lb. divisions	Testing Machines, Inc.
Column crush	H & D crush tester with 500-lb. beam and column-crush attachment	Testing Machines, Inc.
Burst	Cady or Mullen tester	Testing Machines, Inc. or E. J. Cady and Co. or B. F. Perkins & Sons, Inc.
Inside dimensions	Union box gauge	Testing Machines, Inc.

6 **TEST EQUIPMENT** necessary to implement specifications with good incoming quality inspection program. Total cost for all this equipment amounts to approximately $2,900.

may adapt them to your situation.)

This method places each test or requirement at one of three levels:

"A"—superior quality of material and construction.

"B"—standard or somewhat better.

"C"—below standard.

When a "C" rating appears two or more times on the report form, we further analyze boxes to determine whether or not we can accept them for use. A single "C" can be cause for refusal of material, depending on the severity of the rating and the test involved. For instance, column crush, puncture, printing crush, and dimensions substantially affect the structural strength of the box. Thus you should give these requirements careful evaluation before approval.

Paper Is Hygroscopic

Remember that paper is highly hygroscopic and therefore sensitive to relative humidity. This makes it mandatory that you conduct all tests in an area conditioned at ASTM standards of 73.4°F ±3.6°F. and 50 per cent ±2 per cent R.H. Also, due to the hysteresis effect of humidity on paper (2), it is important that you dry the paper at approximately 35 per cent R.H., then approach to 50 per cent R.H. from this dry condition.

Fig. 6 shows the basic test equipment you need to conduct all the tests involved in a good quality control program. Total investment for these instruments should not run more than $3,000, exclusive of the cost of a conditioning room.

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(End)

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aa much lower cost with oMonsanto Polyethylene"

Each polyethylene liner, which has been inserted in a carton, is filled with 5,000 molded eyedropper stems. The liner opening is then twisted shut—and the carton sealed ready for storage and shipment.

"It is essential that the Murine eyedropper stems which we mold be protected from dust, dirt and damage during storage and shipment," reports Mr. Peter Kennedy, plant manager of Fedco Corporation, Chicago, Illinois. "By using polyethylene carton liners, we meet these requirements—and cut our package cost by ⅓ because of materials and labor savings. The polyethylene liners are inserted in a carton and filled with 5,000 molded stem units. The liner opening is twisted shut, sealing out dust and impurities during shipment and storage. Another advantage of the liner is recloseability. Partial contents can be taken out and the liner reclosed to protect remaining material."

Why was Monsanto Polyethylene 706 resin chosen for these liners? "We need a tough film of high impact strength to resist possible puncture. The film must also have good heat sealing properties. Monsanto 706 offers us these features," explained Mr. Robert L. Stahl of Plastic Packaging Co., Chicago, Illinois who manufacture the liners for Fedco.

For more information on MPE 706, and a list of industrial package film fabricators, write to Monsanto Chemical Company, Plastics Division, Springfield 2, Massachusetts.

Monsanto

MONSANTO DEVELOPER IN **PLASTICS**

To replace the solo engineer and his successor, the "committee," more and more companies now have a full-time coordinator—combining the advantages of the engineer and the committee without taking on their drawbacks

Focusing responsibility for packaging management

By Vincent J. Toolan
Member of Technical Staff
Rheem Semiconductor Corporation
Mountain View, California

Does the rapid development of packaging technology—as witnessed by improvements in both materials and techniques—require that packaging management be technically oriented?"

Several years ago this question would not have occurred to most packaging engineers. However, along with the general growth of technology, packaging has shown a dynamic increase in importance —especially to consumer product manufacturers.

Having been a packaging engineer for many years, I recently found it very helpful to take time from today's pressing problems to evaluate objectively the changing nature of the packaging engineer's job.

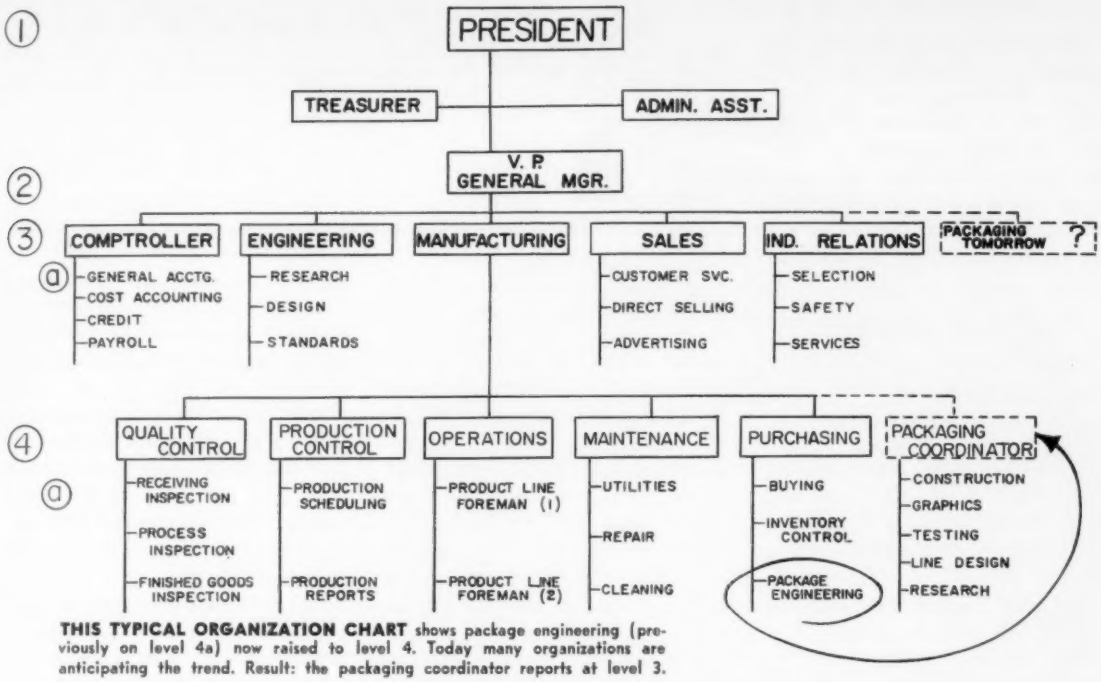
In tracing this evolution it is rarely necessary to go back more than ten or fifteen years to see the present trend. Such a study might well start with the period during or after World War II, when the packaging engineer reigned supreme in many companies with his contributions in product protection, shelf-life extension, and skill in using substitute material—all ample evidence of his value.

For a decade or more though, the demands on those managing the packaging function have been expanding at a rapidly accelerating pace. Packaging decisions that the packaging engineer alone once made are now (because of their economic impact—particularly in a consumer goods market) subjects for top management conferences.

Who Makes Decisions?

Today in conferences, seminars, and publications concerned with

Knowing just how packaging management has evolved gives understanding to the current trends in directing this function of industry. Mr. Toolan traces the flowering of the solo packaging engineer, then reviews the efforts at packaging management by committee. After reviewing the strong and weak points of each approach, he explains the present interest in a full-time coordinator. His findings stem from his pursuit of this subject as the basis for his M.B.A. degree thesis for the Graduate School of Business Administration of New York University.



THIS TYPICAL ORGANIZATION CHART shows package engineering (previously on level 4a) now raised to level 4. Today many organizations are anticipating the trend. Result: the packaging coordinator reports at level 3.

sales, purchasing, and production as well as with packaging, inquiries based on "who makes the packaging decisions in your company?" are increasingly frequent. The very variety and assurance of the answers received confirm the uncertainty or lack of direction that many people feel exists in this area.

The tremendous technical strides that have taken place in packaging materials, and those which are yet on the threshold of discovery, demand that the packaging engineer continue to play a major role in management decisions regarding the package. Enlarging the economic role of the package (with attention from every area from traffic to marketing) means broadening the range of consideration.

This situation has developed and continues to expand with rapidity. Today there is growing realization that top management must keep on increasing the attention it gives to its packaging programs. In most firms the development of an organized program began with the packaging engineer or some one who held that responsibility.

THE PACKAGING ENGINEER

Packaging of consumer products in its earliest and most formative stages placed almost all of its emphasis on the functional aspects. Through most of the early years technology assumed great importance, and the need for a technically oriented person to spearhead all this became obvious. Concentration was on supplying protection —and along with it making every effort to minimize its cost.

With this emphasis on the functional, it was perhaps natural that the people most familiar with packaging would come from this area. The title and means many firms used in the management of the packaging function varied in detail but in essence usually followed a similar pattern. The men chosen to direct or manage it were often engineers with strong technical backgrounds.

The effort that began as a spare-time job gradually grew into a full-time position. With early training and primary interest in the area of the techniques involved in the packaging of goods, it is not strange that this individual was often referred to as a packaging engineer and eventually appeared on the organization chart as "the packaging engineer."

Stress Package's Function

This pattern repeated itself again in companies which were searching for a way to control this new demand for management effectiveness. By the centralization of this function they were trying to take the most direct means toward an effective focusing of their efforts. This was to provide for the production of packages which would give the greatest consumer satisfaction and would therefore be most successful.

The use of the packaging engineer to guide this vital function held most favor in consumer goods companies where there was great emphasis on the functional aspects of the product sold. A manufacturer that felt it had the best cleansing cream on the market many times assumed that, while it needed a jar to distribute the material and production lines on which to produce it, the consumer cared little

about the shape or color of the jar.

This approach did not discount entirely the important aspects of design, marketing, and merchandising, but emphasis was always on the mechanistic concepts of producing and distribution. The packaging engineer was (and is) called upon to coordinate the needs of the package in these areas. This was his primary function.

Took On Responsibility

With this growth in emphasis the packaging engineer in many companies assumed the entire responsibility for packaging. In limiting his efforts to one area he was able to develop in himself (and if the size of the operation warranted, in his staff) a body of specialized knowledge.

He could devote the necessary time and talent to the investigation of methods and materials. Consequently he was in a far better position to make evaluations and decisions without the pressures of time and limited experience.

The evolution of an engineer prepared through experience and training leads to an unbiased viewpoint from which to approach decisions in packaging. This is true in varying degrees from company to company. Thus the amount of independence that an engineer might exercise in making such decisions can be a vital consideration.

The engineer who reports to the purchasing agent, sales manager, or production manager encounters subtle pressures. Thus the growing emphasis has been to strengthen the independence of the engineer's decision making by raising the level to which he reports.

As with any staff function, its successful operation depends heavily on the individual who directs it. However, the dynamic growth in the packaging area made it increasingly obvious that often the approach of the packaging engineer was too limited.

Problems In "Keeping Up"

In many instances because of a primarily technical or production accented background the engineer followed much too narrow a path. He concentrated on the functional aspects of packaging. Often he devoted his whole effort to minimizing cost and maximizing production simplicity. Once this happened he lost his objectivity of viewpoint, and with this loss came a breakdown in communication between the functions of the business concerned with packaging. This led to dissatisfaction and continual strife.

Vincent J. Toolan holds a B.S. degree in industrial management and engineering from Fordham University and an M.B.A. degree from New York University. Mr. Toolan was with Norcross Inc. as chief industrial engineer for seven years before joining Rheem Semiconductor last December as a member of the technical staff.

The development, testing, and procurement of new packages has grown so rapidly in the years since World War II that the mere expansion of the packaging engineer function has not been adequate to keep up with the increasing demands.

In addition to the basic product protection which any successful package must supply, the advantages of increased sales and reduced shipping charges are essential gains that stem from a well-handled packaging program. The whole concept of packaging has expanded to include or touch on almost every aspect of business. The need to include many talents and to improve communications led many companies to form committees on packaging.

THE PACKAGING COMMITTEE

Here is another step in the evolution of the management of packaging. It has as its primary responsibility the delivering of a product to market. In this regard the committee often functions in conjunction with or as part of a new product committee, management committee, or similar activity.

Companies that are striving to upgrade consumer acceptance constantly review their established product lines. Suggestions and complaints concerning packaging regularly move through the committee.

In general, company managements have followed a similar pattern in the development of the committee form of management control. Usually the development of a committee has run through the following phases:

1. Initially the temporary "volunteer fireman" approach, organized to put out the fire or subdue a particular problem.

2. The task force, where each problem requires a new approach idea, which means a committee is formed to handle specific problems or objectives.

With the growth of the packaging concept, the realization has spread that a good program must have widespread impact throughout the company—thus making long term goals, objectives, and organization essential.

3. The permanent committee, formed to handle a program on a continuing basis, usually evolves as an awareness of the long-term need crystallizes.

To accomplish this work effectively members of the committee often come from engineering, product development, manufacturing, sales, and advertising. Often this committee with the packaging engineer as chairman seeks assistance in specialized areas from outside sources (say, market researchers, advertising agencies, or package designers) and internal groups (for instance, legal departments) when their services seem appropriate. The committee then establishes objectives which it hopes to reach and refine.

Worked Well At First

We can say almost without qualification that there have been large gains wherever the packaging committee approach has been used. In numerous instances the improved communication has avoided duplication and has saved untold dollars. Similarly package design changes have contributed to large increases in share of the market.

The committee has proved in practice to be an effective way to avoid the earlier pitfalls encountered in package decision making. When the committee functions properly, there is good control over a coordinated program.

This has the very practical advantage of producing a package with effective visual impact as well as protective and functional properties that keep the product intact prior to use. Usually products needing a high degree of protection but having limited sales appeal or exorbitant cost are screened out by the committee.

New Needs Arise

There seems to be a growing awareness at all levels of company effort that the best packaging and the most effective company posture stem from coordinating the efforts of the marketing, sales, production, purchasing, and research departments. There has to be an over-all program that allows a balance among these activities.

This critical balance is theoretically attainable with a committee representing all these interests. Unfortunately there has not been much success historically. Possibly the greatest faults with this type of organization are the efforts involved in maintaining this balance and the delays caused in evoking effective action.

Prove Ineffective

The very effort to improve communication, particularly in larger companies, has a tendency to create large units that take little effective action. For this reason committees that functioned very well

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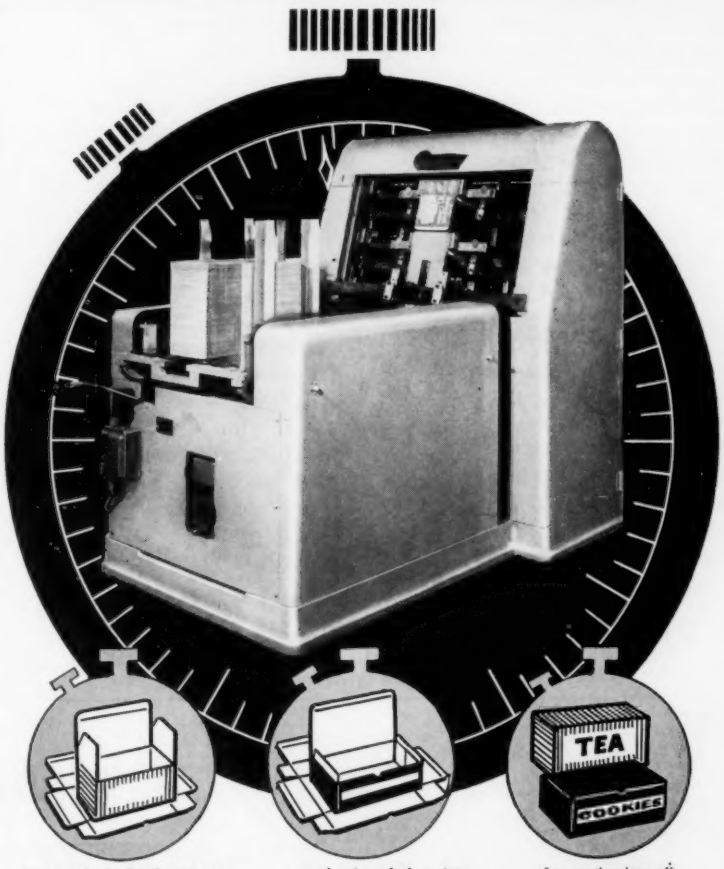

economical glued cartons and trays from low-cost uncoated blanks . . .

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early in their lifetime, sparked by the enthusiasm of their youth, have gradually grown too cumbersome.

It is possible to revitalize a committee with a refreshed approach, but the effort to resolve conflicting viewpoints has disillusioned many managements. The result often has been that the committee bogs down in interminable disputes or ineffective compromises. Occasionally personality differences lead to decisions heavily weighted by prejudice. This makes the virtues of cooperative thinking ineffective.

PACKAGING COORDINATOR

This seems to offer the most effective control of the packaging function in the future. With this arrangement the decision maker can establish and make effective the programs of the early package engineer. Also he gets the effective cooperation of interested individuals and departments in reaching these decisions.

Today new packages are playing an important role in product success, which in turn is vital to company success. This importance has increased management's demands and interest in making new packages more effective.

The large proportion of the cost of the finished product represented by the package (both material and labor) has also been a factor in this growing interest.

Rapidly expanding areas of scientific and mechanical improvement allow for packages with improved materials that are easier or cheaper to handle. These developments justify constant re-evaluation to take full advantage of any potential materials, methods or combination. This evaluation must allow not only for cost, but appearance and handling as well. This in some stage touches on nearly every aspect of company operations.

Seek A Balance

In effect then every component of the company gets involved to a greater or lesser degree in package development. Careful thought must go to the best balance between all aspects, from the purchase and inventory of materials, to the traffic problems of physical distribution. Increased material costs need evaluation in the light of improved marketability as well as shorter shelf life.

All these factors are critical in the success of a package. Despite the potential of the packaging committee the increase in competition has led many companies to seek faster, more effective packaging action. Consumer goods management in general has grown restive with the delays and debilitating compromises often inherent in control left to a packaging committee. This desire to improve the organization of packaging has gradually led to the centralizing of many facets of the function.

Have One Department

This centralization takes many forms but the trend seems to be toward (1) establishing a separate department broader in scope than

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that headed by the package engineer and (2) assuming the activities the committee handled previously.

To perform effectively, the centralized function must have complete management support and must report at a level high enough to free it from petty pressures and prejudices. Emphasis must be on the integration of the normal areas of attention. Centralization of the function and yet having it responsible in a single area, even a major one such as production, can only distort its viewpoint and give it bias.

WHAT COORDINATOR DOES

The demands on the individual who handles this area are great, and his talents and abilities must reflect broad training and background.

If he is to perform effectively, this man needs experience and perception that allow him to evaluate packaging problems from a broad gauge as well as a technical viewpoint. His is the customary problem of a staff man attempting to work progressively with all company activities. He must produce a more salable package at a price that the consumer will pay, allowing for normal profit.

He must have the ability to communicate with the various fields of interest in packaging and create a company image reflecting these various desires.

Administrative ability, particularly in the larger organizations, is another important aspect since he either delegates much specialized effort or purchases it from outside agencies. The packaging coordinator heading up a department is responsible normally for planning, designing, construction, engineering, and field testing many types of packages. The control of these areas requires good organizational ability.

Generates Cooperation

The ability to deal with many conflicting fields of interest within the company and to create a climate of cooperation is a vital part of the coordinator's work. By performing his role effectively he is responsible for a great amount of interaction with other areas of the company. He must be able to appreciate these problems and devise workable solutions.

Seldom is company policy or authority well defined in this area, so the coordinator who has experience at various levels within the company has a real advantage. The opportunity to get an impression of the company and the image it is trying to create is an asset when creating packages that enhance this image.

Things To Know

The rapid development of technological advances in packaging requires that the coordinator develop within his department (and to some degree within himself) a knowledge of basic materials and equipment—if training and experience have not already produced

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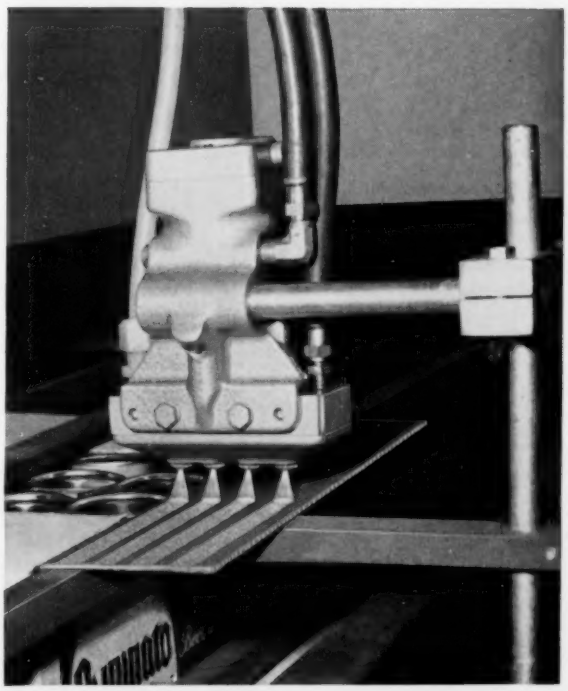

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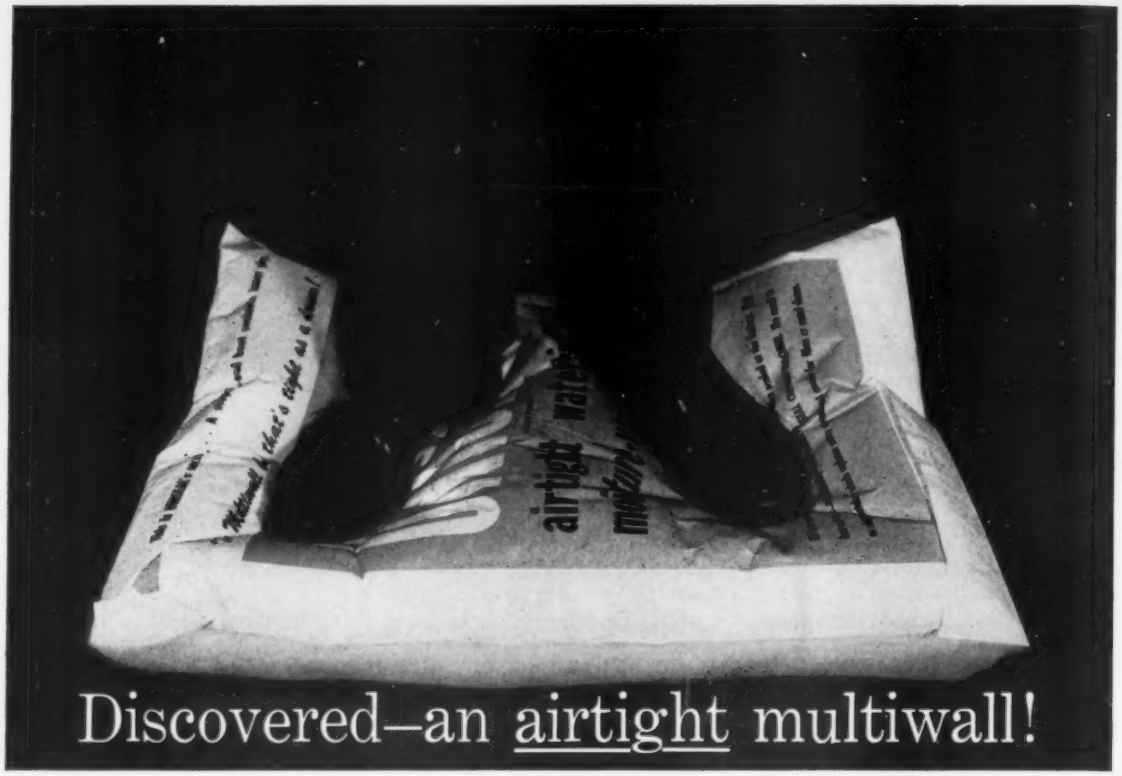

Simple demonstration helps solve major packaging problem for Dow Chemical

The multiwall bag you see here contains nothing but air. The man standing on it weighs 200 lbs. Yet no air can escape. *That's because the bag is Union-Camp's amazing new UNISEAL.*

It ended a two-year search by Dow Chemical for a package that would provide a perfect vapor barrier.

Protection problem critical

The search began when Dow first developed an effective new crab grass killer. To successfully market this new product, an unusually tight package—even air-tight—was essential. The ideal package also had to be sturdy, printable, easy to handle and ship. And economical.

One day Dow engineers witnessed the UNISEAL demonstration you see above. If the bag could lock in air, then it must have the perfect vapor barrier. Further testing proved they were right.

Seals safely—and saves, too

The remarkable new UNISEAL bag features four plies. An outer sheet of semi-bleached paper (for top printability). Two middle plies of kraft. And an inner ply of kraft laminated to aluminum foil with polyethylene. A final extrusion coating of polyethylene resin over the foil serves as the heat-sealing medium for the inner seam and bottom.

The bag can easily be filled on *any standard filling equipment.* A special machine heat-seals the inner ply and applies adhesive to the tops of the outer plies. It then folds over the lip and pastes it to the outside of the bag. Finally, the machine centers a strip of gum tape over the edge of the lip to form a positive *air-tight* closure.

Apart from providing a perfect vapor barrier, Union-Camp's UNISEAL bag also turned out to be the least expensive container of any previously tried!

How much could a Union-Camp multiwall idea save you?

Hundreds of companies, large and small, have cut costs through Union-Camp multiwall ideas like this. Our comprehensive packaging service—5-Star Plan—covers bag construction, design, specifications control, packaging machinery and a survey of your plant. And it's free.

See your local Union-Camp multiwall man for complete details.

UNISEAL'S unique inner ply is made of kraft paper laminated with polyethylene to aluminium foil. Bags can be easily filled on any standard filling equipment.

Secret of sealing. Special machine heat-seals inner ply, folds lip over and pastes to outside of bag. Finally, gum tape is applied (arrow) forming a positive air-tight closure.

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it. This knowledge must not remain static; he should keep it current through constant use of the latest sources of information such as periodicals, trade shows, and salesmen's calls.

Important also is a basic knowledge of the techniques used in areas such as printing and the psychological use of graphics. He must have an undertanding of the attributes of materials such as paperboard, foils, foams, flexible and rigid plastics, among others.

The economic factors involved in one packaging production process compared to another and the inherent appeal of one over the other are basic to successful performance. For example, the coordinator must appreciate the virtues of using letterpress, as opposed to lithography, on a clay coated board and consider the difference in the light of the completed package. Such decisions have far reaching ramifications and involve everything from methods of distribution to merchandising concepts and shelf life.

Moves Toward Objectives

In contrast to the packaging committee, where a large concentration of specialized knowledge was gathered and could only be used effectively through cumbersome negotiation, the packaging coordinator can move directly toward the solution of an immediate or potential problem.

The former members of the packaging committee and department heads continue to lend assistance and advice on decisions, but the result is an individual rather than group effort. This allows immediate and direct response to a request for the packaging of a product.

The coordinator can go to work immediately on many aspects of the problem. Basic materials, cost structure, channels of distribution, among others, are already familiar areas to him. Well aware of the limitations, he can most effectively explore the advantages of those avenues open to him.

Stature Important

The stature of the packaging department head and his ability to act as a focal point in the packaging areas allow the reaching of conclusions on the basis of merit rather than producing a compromise between equals. This means of reaching decisions avoids the inconclusiveness of the committee concept, where no one exercised the authority to make the final decision. It also includes the scope often lacking in the individual packaging engineer.

Most packaging engineers when presented with the concept of the coordinator feel that they are already performing all these functions. However, the time, effort, and money management is spending to find more effective means of managing the packaging function suggest there are inadequacies in the engineer's approach.

The proportions of the efforts by management are usually in direct relation to the importance of packaging in a particular company —but vital in any event. Today the cost of packaging labor and material for many consumer products equals or exceeds the cost of producing the product itself.

This Trend Is Here

The growing use of a full-time executive to coordinate packaging activities reflects this growing concern of management. The packaging engineer who equips himself to meet these additional demands can fill this post.

The increasing emphasis placed on packaging points up the need for more effective control and makes vital the advantages of this approach. The package engineer who fails to recognize this trend of change in emphasis will find his role more and more limited.

The package director or coordinator reporting at a high management level offers most consumer goods industries the most promising answer to a vexing problem. In leading consumer products companies today there is little doubt

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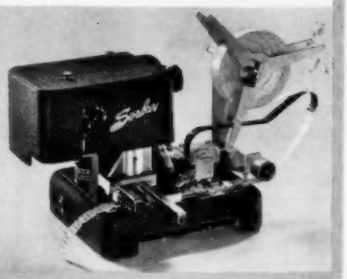

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Marathon, A Division of American Can Company, Menasha, Wis. In Canada: Marathon Packages Ltd., Toronto 3.

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that new packages play an important part in product success.

Coordination Vital

The growing scope and importance of packaging dictates the coordinating of all phases of the company to produce the end product. The amount of work it takes to accomplish this end is particularly heavy in companies with large multiple product lines and short product life cycles.

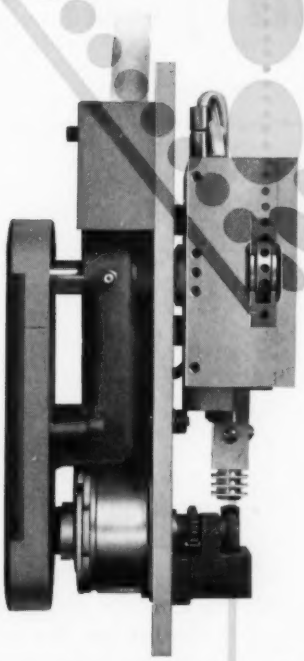
The successful packager of consumer goods must weld the various units concerned with packaging into an effective unit. The essential skills of this effort are:

1. The basic design of the package.
2. A knowledge of materials, qualities, relative values, and cost that can reflect in the finished product. This includes a comprehensive grasp of techniques that allow for economically sound packages.
3. The ability to specify qualities in both material and graphic areas that allow for establishing and maintaining adequate standards.

Problems More Complex

Today there are so many packaging materials, package types, and means of wrapping that the problems of developing the best possible package have increased tremendously. Further, a growing need to base decisions on economic, material, and intangible concepts has made the problem of adequate control that much more perplexing.

With the growing demands of packaging and with dissatisfaction about procrastination and ineptness of present methods of managing the function, there will be more efforts to concentrate authority in a separate department. One man, with the potential of covering the entire spectrum of packaging responsibilities, will head this. The advantages of direct responsibility, full-time effort, and specialized training are present. This seems to be the best consensus of current thinking on just how to manage the packaging function. *(End)*



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How much shock can your package take?

By Egon E. Muehlner
Manager, Instrument Department
Information Technology Division
General Dynamics/Electronics, San Diego

Offhand, do you know the G-rating of your package—that is, the maximum acceleration the total package can endure without damage? If you don't, you should find Mr. Muehlner's presentation a useful guide to determining G-ratings of your packages. His review of some basic principles regarding falling bodies and the forces involved is a real aid to better understanding load/distance relationships. He also discusses G-load—what it is, what it shows, how to determine it accurately with instruments—and how to get optimum G-ratings for your package.

If you packed your product between two 1-in. layers of plastic foam within a container, and then dropped the entire package from a height of 4 ft. onto a concrete floor, would you be surprised to find the shock measured 75G's? You should not be surprised at this apparently high figure because it has happened.

The foam plastic does no more than prevent the product from hitting the edges or corners of some hard object; the item is stopped in a distance provided by the *elasticity* of the foam. At very best, the foam produces a *uniform deceleration.*

In the instance above, the foam could not compress more than about ¾ in. You can note immediately that the necessary deceleration was at least 64G's because the theoretical number of G's encountered in the drop of the package is equal to the ratio of the distance of free fall (48 in.) to the stopping distance (0.75 in.). Since perfectly uniform deceleration was not achieved, the 75G's actually occuring are very understandable.

What Is Deceleration?

To understand this figuring, let us briefly review what is meant by deceleration and G. Anything that falls freely is accelerated by the earth's standard gravitation, called 1G. After 1 sec., a free-falling body achieves a velocity of 32.2 ft./sec. Its average velocity during that time is just one-half of this.

$$v_{avg} = \frac{v_o + v_t}{2} = \frac{0 + 32.2}{2} = 16.1$$

where v_o = initial velocity and

v_t = terminal velocity

and it covers a distance of 16.1 ft.

Expressing this in mathematical terms, the *terminal velocity*, v_t, is

$$v_t = gt \qquad (1)$$

where t is the time spent for the free fall, and g is the acceleration in ft./sec. velocity increase/sec. The distance, s, covered is

$$s = \frac{gt^2}{2} \qquad (2)$$

Whereas acceleration increases the speed, deceleration decreases it —and basically the same laws apply. In case of deceleration, the *terminal velocity*, v_t is

$$v_t = v_o - gt$$

where v_o is the initial velocity. The distance, s', covered is

$$s' = h - \frac{gt^2}{2}$$

where h is the height of the fall. Of course, if something falls to the ground and is completely stopped, its terminal velocity equals zero in the case of deceleration. In this instance, Equation 2 holds for both acceleration and deceleration.

Since, at the moment of impact, the terminal velocity or acceleration during *free fall* is equal to the initial velocity or deceleration during stopping after impact

$$gt = g't' \qquad (3)$$

where g' and t' are respectively the deceleration and time required for the item to come to rest.

Load/Distance Relationship

If s' is the deceleration distance (compressibility of the packaging material) ,we know, from Equation 2, that

$$s' = \frac{g't'^2}{2} \qquad (4)$$

Combining Equations 2, 3, and 4 results finally in

$$\frac{s}{s'} = \frac{g'}{g} \qquad (5)$$

In other words, the "G-load" is inversely proportional to the distances. Thus, coming back to our previous example, if something falls with 1G acceleration through 48 in. and is stopped in 0.75 in., theoretically it encounters an average deceleration of

$$g' = (g)\left(\frac{s}{s'}\right)$$

$$= (1G)\left(\frac{48}{0.75}\right)$$

$$= 64G's.$$

Package Is "Weightless"

The term G is used to express acceleration or deceleration in multiples of the earth's normal gravitation. Rockets generally accelerate with more than 1G, and most boxes when hitting the ground are decelerated with considerably more than 1G. Let us look a little closer at just what happens to an object packaged in a box which drops to the floor.

As long as the box flies through the air, the box and its contents are weightless. Anything contained inside floats with no forces acting between the packaging material and the contents.

However, during that time the box attains a velocity which is reduced to zero upon impact. The mechanical energy represented by the falling box is destroyed, and deformation of the box takes place —even though it may not be a permanent deformation. Suppose the box drops on a corner: the corner may bend, and this absorbs the mechanical energy.

Force Not Constant

If we bend this corner, not by a fall, but by gradually applying a force to it, we observe that the force necessary to produce this deformation increases. Initially, we need a very small force to produce the first indentation; later we need an increasingly larger force. This means that the *force* acting on the box is not constant.

A *constant force* results in a constant rate of deceleration just as a *constant thrust* accelerates a rocket with a constant rate of acceleration.

(Turn page)

DEFINING THE "G"

g = Constant acceleration or deceleration due to the force of gravity acting on a body. It has a constant value of 32.2 ft./sec./sec.

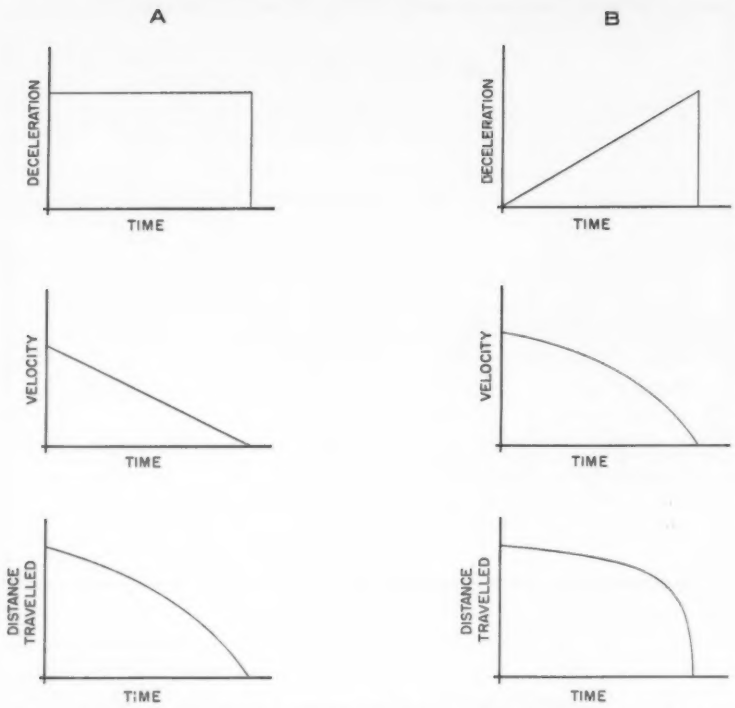
G = The magnitude of acceleration or deceleration in multiples of normal earth gravitation; hence an indication of the number of gravity units.

G-factor = The ratio of conditional acceleration in length-time units to the constant gravitational acceleration (g) in the same length-time units (ft./sec.^{2}). It is an abstract number having no units of its own. Thus 5G's means conditional acceleration is 5 times as great as gravitational acceleration.

G-load = A measure or indication of the peak shock or shock load experienced by the package.

G-rating = The maximum acceleration that can be endured by the total package without damage. (Note: fragility rating is generally used to indicate the maximum acceleration that can be endured by the product without damage.)

Egon E. Muehlner holds the German equivalent of an M.S. degree in mechanical engineering and Ph.D. of engineering. From 1953 to 1956 he worked with the U.S.A.F. as chief engineer of the mechanical engineering branch, Holloman Air Force Base, New Mexico. He joined Convair (a General Dynamics division) in 1956 as design specialist in the servomechanisms group and later served as group engineer of the instrumentation design group. In 1958 he was appointed chief project engineer of Convair Instruments. This organization, which Dr. Muehlner now heads as manager, became part of the newly founded General Dynamics/Electronics Division of General Dynamics in 1961.



1 DECELERATION, VELOCITY, AND DISTANCE TRAVELED for (A) constant deceleration and (B) deceleration proportional to time—which falling box would experience.

A *changing force* produces a changing rate of acceleration and allows for the velocity achieved and the distance traveled, which are different from the case of constant acceleration or deceleration.

Fig. 1 shows the deceleration, velocity, and distance traveled for both constant deceleration (A) and deceleration rising with time (B), as we experience in the case of a falling box. However, it is practically impossible to verify a constant deceleration for a falling object except on a special machine. In all practical cases, the *rate of deceleration* is somewhat like that in Fig. 1B.

G-Load Increases

Even if the object is cushioned by springs, pneumatic cylinders or the like, the spring properties provide a rising rate of deceleration. As far as G-load is concerned, this means that initially we have a small G-load and later a higher one. This is why, in the experiment cited with the box, the maximum G-load exceeded the 64G's, which we computed on the basis of a uniform, constant deceleration.

There is another reason why the rate of deceleration rises—in many cases even beyond the rise incurred if we drop the box on a spring. Let us take the example of foam cushioning.

Initially only the edges of the packaged item may rest on the foam cushion. Upon impact the item starts sinking into the foam material, and the foam starts pressing against the item over the entire surface, exerting forces over a wider area. So, even if the foam is an ideal spring—with a force strictly proportional to *deflection*—the reaction of the foam to the deflection caused by a real object is "nonlinear"; that is, it is *not* proportional to the deflection.

Incidentally, the same situation exists with automobile tires. While air is theoretically an ideal spring, the tire, as a spring element, is strictly nonlinear. The more the tire is pressed to the ground, the larger the tread area becomes on which the forces between the ground and the air pressure inside the tire act.

What Does G-Load Show?

Although you usually consider the G-load indicative of possible damages to the container contents, strictly speaking, this is not true. The mechanism is somewhat more complicated.

For example, visualize a piece of electronic equipment packaged in a shipping container made of several layers of corrugated board; the housing of the equipment fits snugly in the box. Now assume that this box is dropped inadvertently and survives the impact without damage. Even though the deceleration experienced by the housing may be rather high, the acting forces are distributed evenly over its surface; no damage results.

But now let us look at a specific internal component of the equipment—a resistor with its leads soldered to two junctions. Under the impact, the leads start to bend, and the resistor may be displaced by as much as ⅛ in. This results in a relatively low G-load for the resistor but causes a considerable deflection which may result in breakage of the solder joints.

MEASURING G-LOADS

Generally speaking then, individual damages and individual G-loads depend upon the *elasticity* of the various components and their *mass*. Therefore, you cannot predict exactly these individual damages and individual G-loads on G-load measurements of the whole package alone. However, the over-all G-load does give you a good indication of the severity of the impact.

Mass-Spring System

If we look only at the G-load, it is immaterial whether a deceleration of, say, 50G's works for 10 milliseconds or 1 sec. In many cases this is true, but whenever we deal with a *mass-spring system*, it is not true at all. In a mass-spring system the mass is suspended in a spring-like material—a material which not only deflects under impact but also

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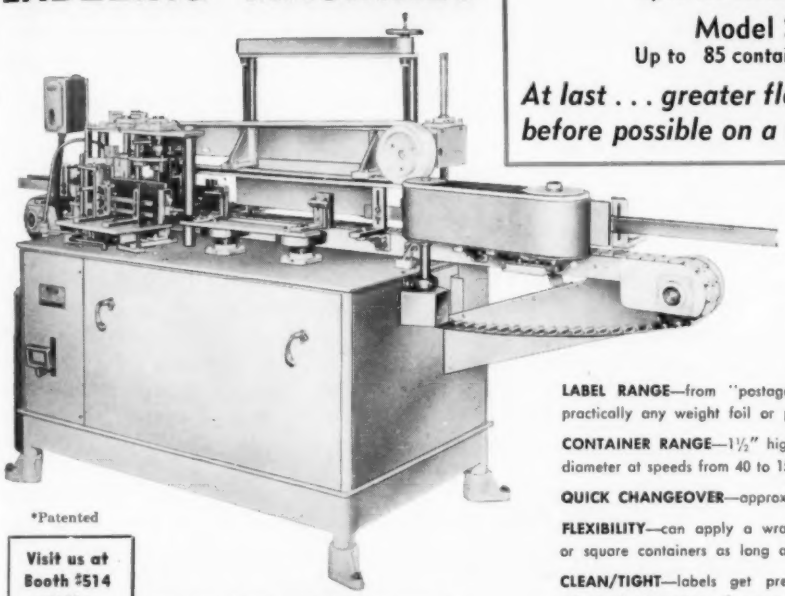

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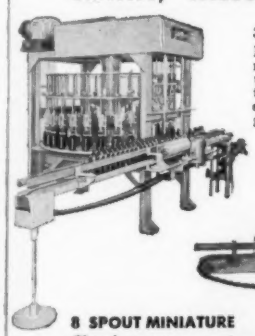
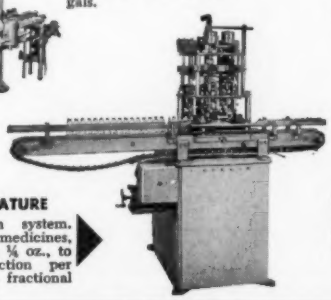
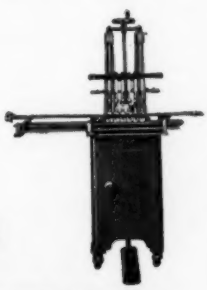


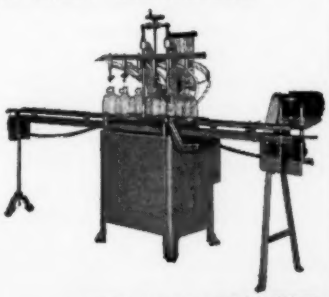
30 SPOUT MACHINE
Equipped with 50 gal. removable tank. Production per minute: to 250 fractional oz., 225 pts., 180 qts., 150 half gals., 75 gals.



8 SPOUT MINIATURE
Closed vacuum system. For perfumes, medicines, etc. Range from ¼ oz., to 16 oz. Production per minute: to 150 fractional oz.



MODEL B PORTABLE
4 to 6 spouts. Production per minute to 40 fractional oz., 24 pts., 12 qts.



MODEL MR-12 STRAIGHTLINE
6 spouts for ⅛ and 1 gals., 12 spouts for fractional oz. up to gals. Production per minute: to 75 fractional oz., 50 pts., 40 qts., 18 half gals., 12 gals.

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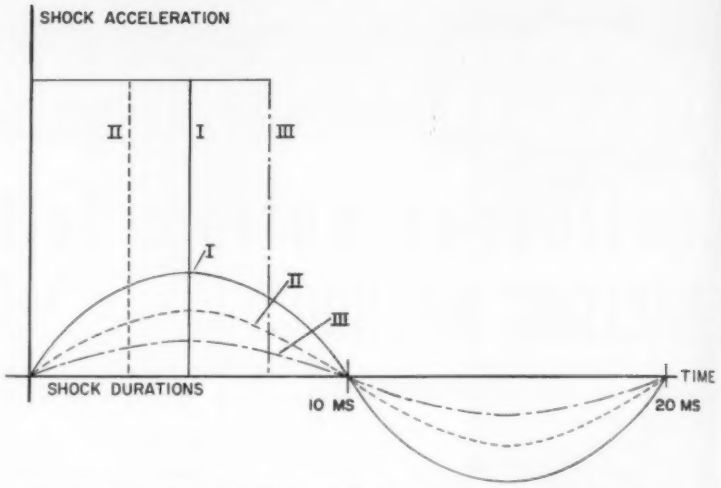
bounces back. Such a system is capable of *oscillation*.

The individual resistor suspended by its leads is such an "oscillatory" system. In such a case, it makes a great deal of difference whether the shock duration is short or long.

Suppose the oscillatory system is such that it performs 50 oscillations/sec. if started and left alone. Obviously, if the shock duration is 1 sec., it covers no less than 50 oscillations. This means that, after some initial oscillations, the component deflects statically.

But if the shock duration is only 5 milliseconds, the shock duration is exactly *one-quarter* of the time (1/50th of a sec., or 20 milliseconds) needed for one full oscillation. In this case, we say that the shock is in *resonance* with the oscillatory system. The shock serves *only* to accelerate. When the oscillatory system starts coming back, the shock is no longer there to go against the system's backward motion.

Fig. 2 (Curve I) shows the oscillating system with the well-known sine wave for the time-distance (amplitude) relationship and a shock of *one-quarter* wave length. Curves II and III of Fig. 2 show that with a longer or shorter shock the amplitude of the oscillation is less.



2 VIBRATION AMPLITUDES for various shock durations. Curve I shows system with well-known sine wave for time-distance (amplitude) relationship and shock of 1/4 wave length. Curves II and III show that with longer or shorter shock, amplitude of oscillation is less.

Determining Actual G-Load

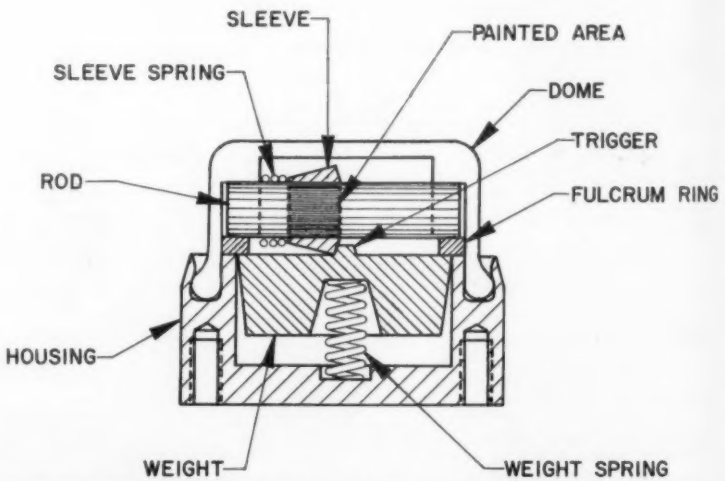
To accurately determine G-load as a measure of the severity of the shock, you can use an instrument which has either (1) a natural frequency high enough so that the shock duration is much larger than the duration of one single oscillation or (2) a system which is basically nonoscillatory in nature.

Nonoscillatory Shock Indicator

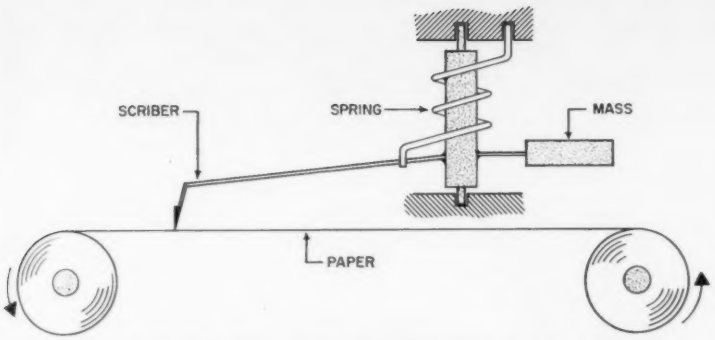
Fig. 3 shows one design of a nonoscillatory shock indicator. It features a mass (weight) pressed against a shoulder (fulcrum ring) by a spring. The mass starts moving only after the G-load exceeds a value set by the ratio between mass and spring load. As soon as the mass starts moving, it trips an indicator mechanism. The indicator shows that the G-load has been exceeded by exposing a painted band on a rod which is visible through the transparent dome. The device is sensitive to acceleration forces from the bottom and from the side. In the latter case the weight tilts around the fulcrum ring.

This type of instrument indicates the G-load exactly, irrespective of the duration of the shock—as long as the shock duration is not extremely small (less than about 10 milliseconds). For very small shock durations of this magnitude, "excess G's" are required to accelerate the mass from rest to the position in which it triggers the indicating mechanism. However, shocks occurring in practice are ordinarily long enough, and the indication of these instruments is practically independent of the shock duration.

This type of shock overload indicator is sensitive in two of the three major axes. It provides a permanent record but reacts only once and



3 SHOCK OVERLOAD INDICATOR (cocked state) features mass (weight) pressed against shoulder (fulcrum ring) by spring. Mass starts moving only after G-load exceeds set value. This type of instrument indicates G-load exactly unless duration is less than 10 milliseconds.



4 SPRING-MASS SHOCK MEASURING INSTRUMENT of oscillatory type is sensitive in one axis only. Gives permanent written record and records any number of shocks if paper is moved underneath scriber. Indication depends on shock load and actual shock duration.

then must be reset. It does not indicate the actual *magnitude* of the shock. It shows merely whether the G-load has or has not exceeded the set value.

Oscillatory Shock Indicator

Fig. 4 shows an oscillatory type shock measuring instrument. Basically it consists of a mass-spring system and a lever scribing on paper. It is sensitive in one axis only. It provides a permanent written record and can record any number of shocks if the paper is moved underneath the scriber.

This type of instrument constitutes an oscillatory system, and its indication is dependent upon both the shock load and actual shock duration. If this system had a natural frequency high enough so that most shocks occurring in practice had a duration larger than one oscillation, the instrument would give a true magnitude of the shock. However, to achieve a writing amplitude of an inch or so, the natural frequency usually must be in the order of 25 to 50 cycles/sec. Thus we get into the realm of the shock durations ordinarily encountered by dropping boxes.

Find Shock Magnitude

Fig. 5 shows curves of the actual indication of such an instrument for "half-sine wave" shocks of various durations for three different damping coefficients. (A "half-sine wave" shock is a theoretical shock, characterized by an acceleration which rises and falls back to zero, in accordance with the positive half of a sine wave.) These curves were obtained with the help of an electronic computer. The indication should be uniform, but it varies.

Thus, as a G-load indicator, the instrument can be used mainly for comparing shocks of approximately the same duration. In this instance, the instrument finds the magnitude

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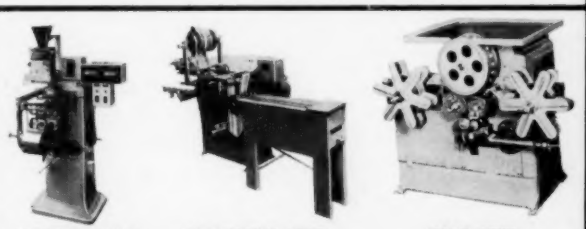

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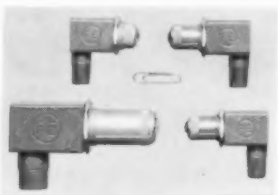
Proximity sensor Type SA-1R contains light-source, photocell, and an infrared filter, all in a small anodized-aluminum housing with standard four-prong connector. The solid-state photocell is sensitive, sturdy, and sealed for protection against moisture, dust, or corrosive atmospheres. This scanner operates on reflected light, is responsive to metallic and non-metallic objects. Two models available. Write for Bulletin 260-A.

Type	Max. Sensing	Lamp rating
SA-1R	up to 2 inches	5 v. a-c 60,000 hrs.
SA-1RM	up to 6 inches	2 v. a-c 5,000 hrs.



Short-range scanner SA-1 and medium-range scanner SA-1M consist of two units, the light source and the photocell unit. These small-size scanners have adjustable focus of light-beam for high-precision scanning of rapidly moving parts, with beam-interruption by 1/32" objects. Eyeshade and infrared filter available to increase range and effectiveness. Write for Bulletin 659.

Type	Max. Sensing	Lamp rating
SA-1	up to 4 feet*)	6 v. a-c 5,000 hrs.
SA-1M	up to 12 feet*)	5 v. a-c 5,000 hrs.

*) can be increased 50% by using eyeshade and infrared filter.

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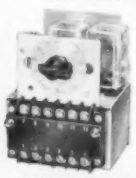
Type PE3 — General-purpose relay
Type PE4 — High-speed-impulse relay
Type PE5 — Time-delay relay
Type PE7 — Photo-electric timer

For use with photoelectric scanners; provide suitable light-source voltages; DPDT load contacts handle 8 amperes (non-inductive) at 115 volts a-c.

CK ELECTRONIC TIMERS



Model 120 General-Purpose timer features cold-cathode tube and identical plastic-enclosed plug-in relays, has seven basic modes of operation, including repeat-cycle timing. (Size 4⅞" x 3¾" x 3½".) For information on timers write for Bulletin 120.

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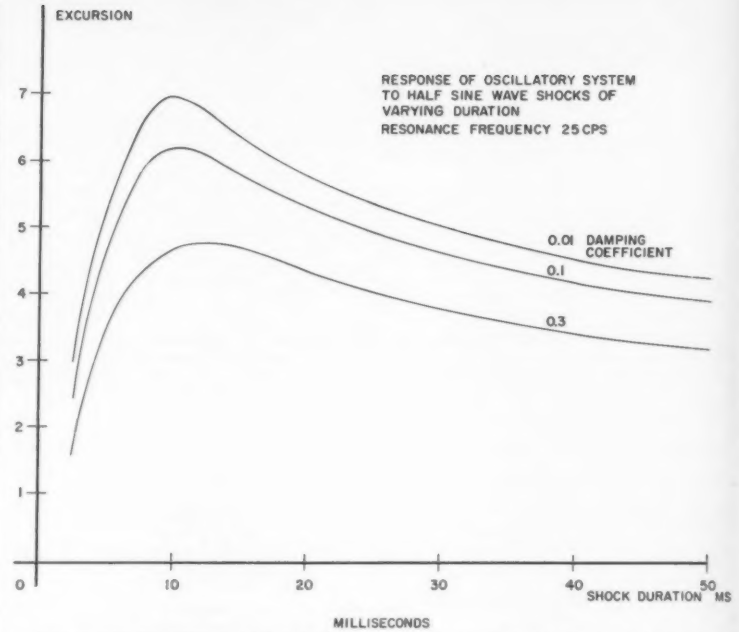


5 RESPONSE OF SPRING-MASS SYSTEM to half-sine wave shocks of various durations for 3 degrees of damping. These curves were obtained with help of electronic computer.

of the shock under conditions of improved springiness, greater weight of the contents, etc.—but with one and the same box and the same dropping height. You should not take the indication as an exact measurement of the actual G-load.

One other point deserves consideration. The weight and size of the instrument you use has a bearing on your results. For example, the heavier weight of the latter instrument can affect the over-all reaction of the package to shock.

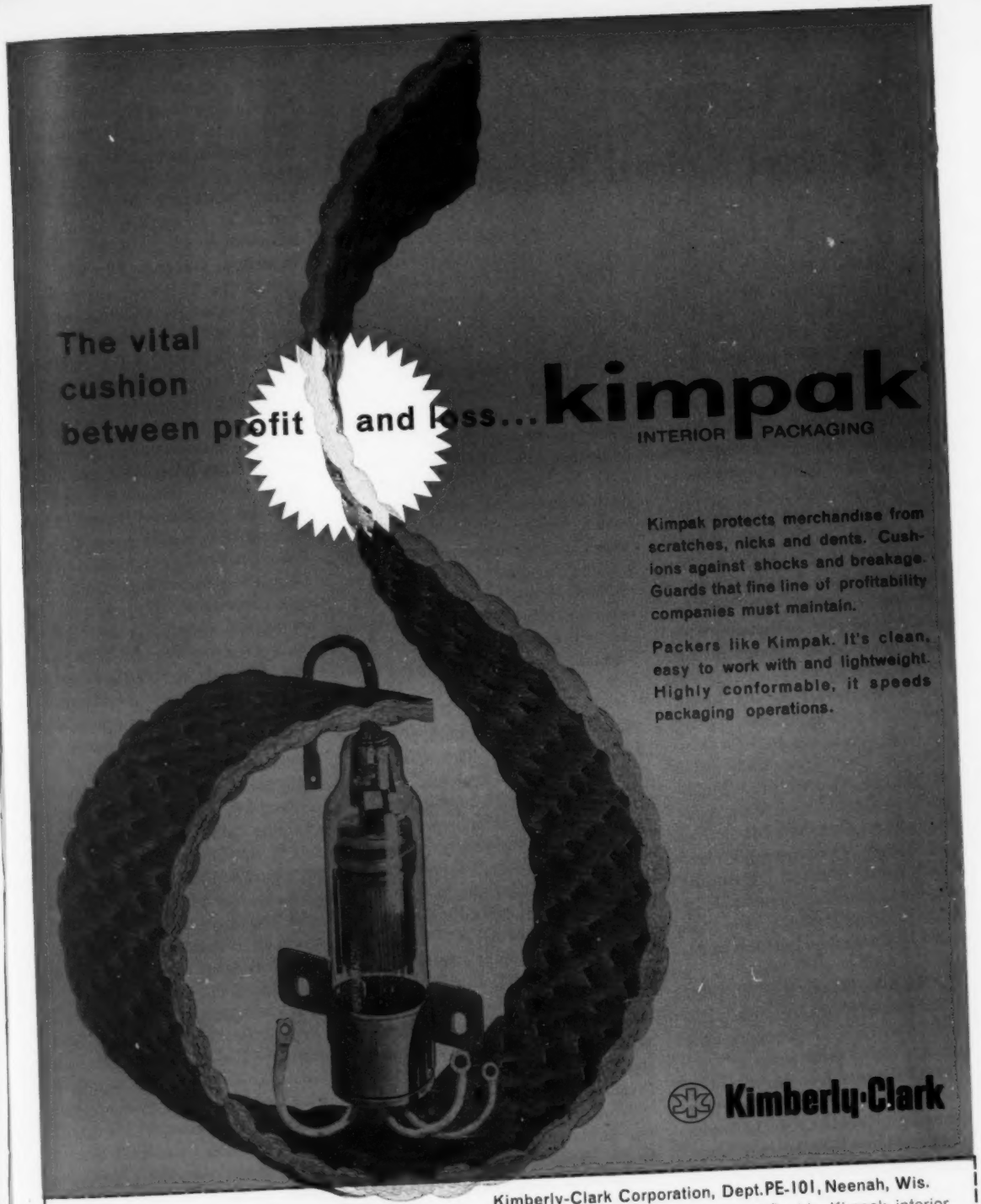
Using Shock Instruments

To what use can you put these shock instruments? Suppose you conduct tests with various packaging methods. You can eliminate a lot of guesswork by using these instruments to find the best possible packaging method by objective means. Package them with the contents for drop tests and other tests to be performed on the package. Since various methods of packaging result in various G-ratings (as determined by instrument measurement of shock loads), the packaging method that results in the optimum G-rating is the best packaging method.

Getting Low G-Ratings

Remember that there are two basic ways to achieve a low G-rating for packages: (1) using cushioning materials that are elastic, such as plastic and rubber foams; or (2) using cushioning material that absorbs the energy by crushing, such as corrugated fibreboard. In both instances it is important that the cushioning material be neither too hard nor too soft.

If the cushion is too hard, the G-rating is high because the material acts essentially as a solid. Likewise, if the cushion is too soft, the G-rating obtained is high because the cushioning material "bottoms out." Remember that even the best cushioning material does no more than provide a somewhat uniform deceleration and that the type of test performed determines the optimum G-rating. In the example cited at the beginning of this article, rather high G-loads may be inevitable in drop tests, but we may still consider the package successful if the G-rating does not exceed the possible minimum by more than a factor of 1.5. *(End)*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Packaging Institute's 23rd Annual National Packaging Forum

Packaging Institute is holding its 23rd Annual National Packaging Forum October 18-20 at the Biltmore Hotel, New York City. A new feature of this year's forum will be the synchronizing of speakers in concurrent sessions.

In each concurrent session, the first, second, third, and fourth speakers will start at the same time their opposite numbers are starting in the other sessions. This will let members of the audience move from room to room without missing the start of a paper.

Those interested in the recent hearings on packaging and labeling will have a chance to hear Sen. Philip A. Hart (D., Mich.). He will address PI's mid-forum luncheon, October 19.

Wednesday, October 14:

10:00 a.m. President's address—L. H. Zahn, director, purchasing and package development, Ciba Pharmaceutical Products, Inc., followed by the annual business meeting.

11:00 a.m. Presentation by United Airlines—"Wings for your packaging future," E. L. Dare, manager of cargo development.

12:15 p.m. Luncheon. "The broadening horizons of packaging technology," William M. McFeely, vice president, Riegel Paper Corp.

2:30 p.m. Three concurrent seminars: *Research and development*—Dr. Frank C. Campins, president, Polymer Industries, Inc., chairman. "The scope of gases in packaging technology," Edward Tarnell, president, Roger Williams Technical & Economic Services, Inc.; "The path ahead for cushion technology," Richard H. Thomas, president, Thomas Plastikraft Corp.; "The engineering approaches to insulation against shock and temperature," T. J. Grabowski, section head, industrial insulation research, R & D center, Armstrong Cork Co.; "Vacuum technology in packaging," Philip J. Clough, director of metallized products program, National Research Corp.; "The common goal of the technical committees," Dr. Frank C. Campins, president, Polymer Industries, Inc.

Bulk packaging—D. B. Carmody, purchasing agent, Union Carbide Corp., chairman. "The multiwall paper bag—a bulk package," Thomas E. Dowling, packaging and labeling section, American Cyanamid Co.; "The fibreboard container as a bulk package," Milton Gray, Jr., materials handling engineer, U.S. Industrial Chemicals Co.; "The semibulk container," C. B. Coleman, president, Fabricated Metals, Inc.; "Containerization," D. G. Ward, general manager, container division, General American Transportation Corp.; "Plastic packaging grows up," Walter Craig, vice president, Plasticon Corp.

Marketing—O. C. Holland, director of advertising, Interchemical Corp.; Printing Ink Div., chairman. "How color and design affect consumer preference," Robert G. Neubauer, Robert G. Neubauer, Inc.; "Choosing package shapes and sizes for consumer preference," Maxwell B. Rogers, director of package design, Avon Products, Inc.; "The right packaging materials and consumer preference," Albert Kner, director of design laboratories, Container Corp. of America; "The growing influence of convenience in packaging," William S. Fishman, senior vice president, Automatic Retailers of America, Inc.; "Predicting consumer preference in packaging," (author to be announced).

Thursday, October 19:

9:30 a.m. Three concurrent seminars: *Production line and machinery*—Ira Gottscho, president, Adolph Gottscho, Inc. and R. Ross Kitchen, plant manager, Glenbrook Laboratories Div., Sterling Drug, Inc., co-chairman. "Planning, installing and operating a pressure packaging line," J. P. Barrett, senior industrial engineer, S. C. Johnson & Son, Inc.; panel: Byron Kingery, Lederle Laboratories; Norman Yaeger, Colgate Palmolive Co.; F. W. Politi, Rexall Drug Co. "Packaging angel food-type cake mixes," N. J. Klipfel, division packaging and material handling engineer, General Mills, Inc.; panel: (to be selected). "Existing equipment, with modifications, utilized for packaging plastic bottles," F. W. Politi, manager, St. Louis Laboratories, Rexall Drug Co.; panel: R. Frundt, McKesson & Robbins, Inc.; Norman Yaeger, Colgate Palmolive Co., J. P. Barrett, S. C. Johnson & Co. "Setting up pharmaceutical packaging operations overseas," R. R. Umbdenstock, manager of pharmaceutical products, Pfizer International, Inc.; panel: Robert H. Doney, Smith, Kline & French; William W. Brown, Merck, Sharp & Dohme; Nelson Zeigler, Sterling Drug, Inc. "Why and how Lederle installed its own low volume aerosol line," L. Byron Kingery, assistant to packaging superintendent, Lederle Laboratories Div., American Cyanamid Co.

Paperboard—George T. Joyce, assistant director, product development department, St. Regis Paper Co., chairman. "Base natural component paperboards for packaging," Henry L. Vranian, vice president, Chesapeake Corp. of Virginia; "Bleached and machine coated component paperboards for pack-

aging," Dr. Keith W. Max, director of research and development, Continental Can Co.; "Specialty laminated paperboard structures," Howard L. Heise, vice president and director of research, The Gummed Products Co.; "Printing processes for paperboard," Ralph M. Audrieth, head, silk screen process, Printing Ink Div., Interchemical Corp.; "Preprinting of linerboard for corrugated boxes," Parker H. Davis, sales manager, Superior Paper Products Div., St. Regis Paper Co.

Package testing—George Roshkind, vice president, Container Laboratories, Inc., chairman. "Package testing as a manufacturing control," Peter J. Hakim, product development engineer, marketing research dept., Union Bag-Camp Paper Corp.; "Package testing for product protection determination," Carl J. Begemann, merchandise manager, Supreme Products Div., A.S.R. Products; "Loaded package testing as a vital link to successful importation," Jerome W. Kirschbaum, division manager, Container Laboratories, Inc.; "Package testing—a vital tool of creative selling," Jerome J. Kipnees, vice president, package engineering, Atlantic Gummed Paper Corp.; "The development of testing standards," Maurice A. Burnston, technical assistant, The Technical Assn. of the Pulp and Paper Industry.

12:15 p.m. Luncheon. "The hearings on packaging and labeling practices and your package," Sen. Philip A. Hart (Mich.), Chairman, Subcommittee on Antitrust and Monopoly of the U.S. Senate Committee on the Judiciary.

2:30 p.m. Three concurrent seminars: *Drugs and pharmaceuticals*—Charles Spannello, director of purchases, Schering Corp., chairman. "Tablet and capsule packaging," William Dunlop, Jr., administrative assistant, Wyeth Laboratories Div., American Home Products; "Liquid, cream and powder packaging," Paul H. Schulz, manager, package development and procurement, Ciba Pharmaceutical Products Inc.; "Sterile pharmaceuticals," Nathan C. Kirsch, sterile product dept., Schering Corp.; "Quality control of incoming material," Dr. Marvin J. Chertkoff, manager, quality control, pharmaceutical production, Merck, Sharp & Dohme, Div. of Merck & Co., Inc.

Industrial packaging—Charles J. Zusi, packaging consultant, chairman. "The world situation in fibreboard packaging," Harry J. Bettendorf, president, Board Products Publishing Co.; "Current developments in wooden packaging," Thomas J. Luddy, secretary, National Wooden Box Assn.; "Packaging advances in the automotive field," Ralph A. O'Reilly, Jr., packaging manufacturers' representative, Ralph A. O'Reilly and Assoc.; "The place of foams in industrial packaging," Herbert A. Ehrenfreud, DeBell & Richardson, Inc.

Food packaging—Eugene J. Kane, manager, packaging research, Thomas J. Lipton, Inc., chairman. "Expanding the polyethylene extrusion-coating art," Dom A. Perino, manager, development div., Milprint, Inc.; "Polypropylene's place in flexible packaging," Fred B. Shaw, general manager, research and development, flexible packaging div., Continental Can Co., Inc.; "Polyvinylidene chloride coating latices," Oscar W. Kaalstad, manager, sales development dept., organic chemicals, W. R. Grace & Co., Dewey and Almy Chemical Div.; "Technical requirements for boil-in-bag packages," James W. Coyle, technical director, flexible packaging dept., Standard Packaging Corp.; "Vacuum packaging in flexible materials," N. W. Postweiler, manager of sales, flexible packaging div., Riegel Paper Corp.

6:30 p.m. President's reception.

7:30 p.m. PI awards dinner.

Friday, October 20:

9:30 a.m. Three concurrent seminars: *Flexible packaging*—Bruce Miller, Elm Coated Fabrics Co., Inc., chairman; James Houle, Tee-Pak, Inc., co-chairman. "Oriented polyvinyl chloride film," Woodrow J. Vogel, manager, film div., Reynolds Metals Co.; "Sealability and machinability of polypropylene," R. L. Wibbens, plastic sales development, Hercules Powder Co., Inc.; "Flexible packaging overseas 1961," Lowell K. Hanson, general manager, overseas div., Continental Can Co.; "Laminated films add up to better packages," Drury R. Burton, manager technical service and development, converting div., The Dobeckum Co., Div. of The Dow Chemical Co.; "Polypropylene films," Ralph M. Winters, manager, market development and technical service-film, AviSun Corp.

Adhesion—F. C. Palermo, research, Johnson & Johnson, chairman. "Starch and dextrine adhesives—past, present, future," Vincent K. Smith, chief chemist, American Adhesives Co.; "Resin adhesives for straight line gluing," Edward J. Murray, development group leader, Morningstar-Paisley, Inc.; "New developments in synthetic resin hot-melt adhesives," Robert S. Forsyth, senior chemist, National Starch & Chemical Co.; "A food processor looks at adhesion problems," W. Tate Hutchins, package technologist, The Kroger Co.; "Important factors in carton sealing," Richard J. Nadaskay, process engineer, packaging, Personal Products Corp.

Food additive problems—Adolph Miller, vice president, research and development, Milprint, Inc., chairman. "The effect of the food additives amendment on paperboard," Dr. E. Bruce Brookbank, Jr., patent coordinator and director of food additives law compliance, The Mead Corp.; "The effect of the food additives amendment on paper," Dr. C. R. Calkins, director, research and development, Riegel Paper Corp.; "The effect of the food additives amendment on foil and film laminates," Dr. W. P. Andrews, director, materials research dept., Reynolds Metals Co.; "The effect of the food additives amendment on adhesives," Dr. Howard Kane, vice president and technical director, Polymer Industries, Inc.

12:15 p.m. Luncheon. "Your future, your package and you," Robert D. Glidden, vice president, Personal Products Corp. *(End)*

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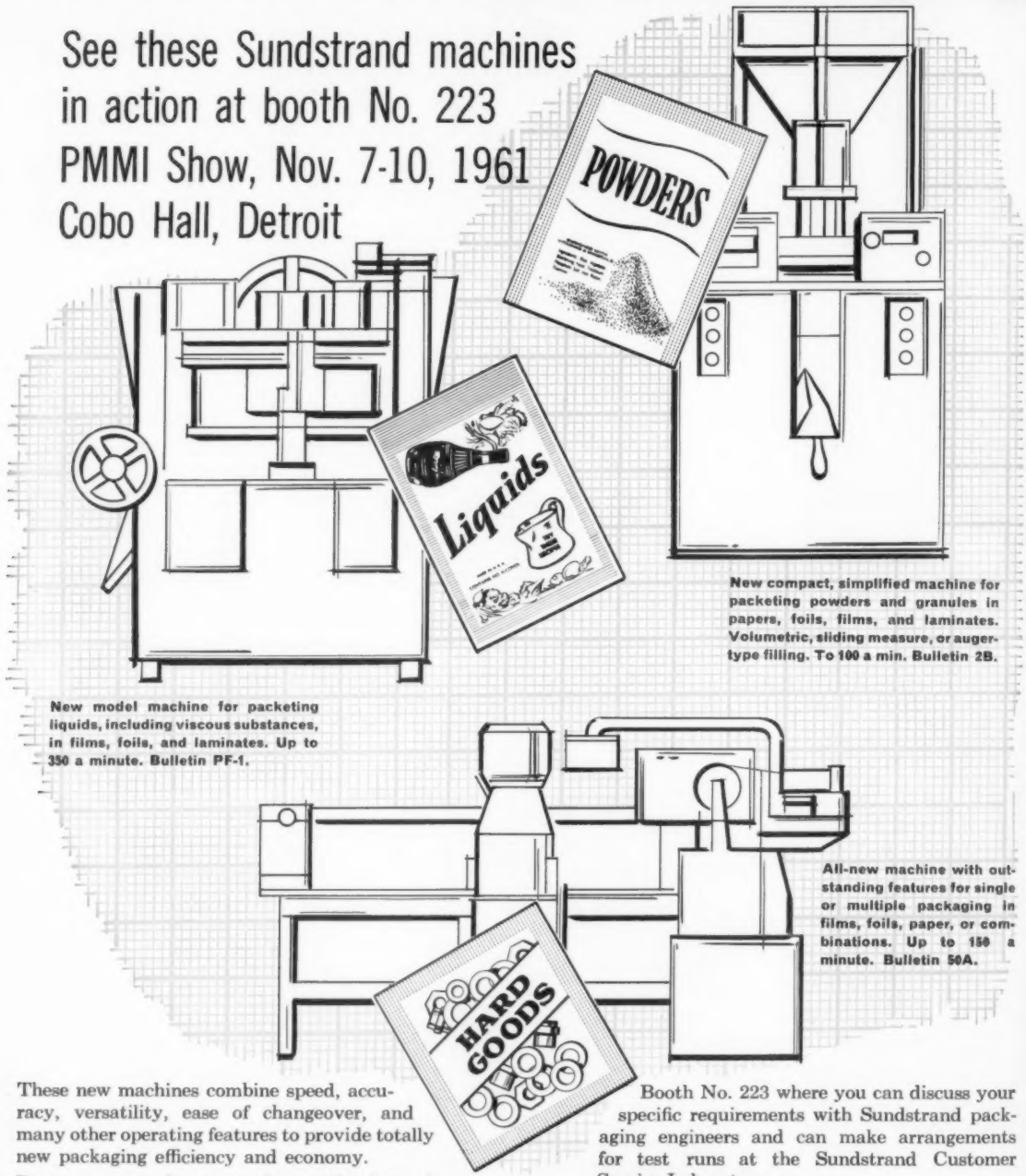


New compact, simplified machine for packeting powders and granules in papers, foils, films, and laminates. Volumetric, sliding measure, or auger-type filling. To 100 a min. Bulletin 2B.

New model machine for packeting liquids, including viscous substances, in films, foils, and laminates. Up to 350 a minute. Bulletin PF-1.

All-new machine with outstanding features for single or multiple packaging in films, foils, paper, or combinations. Up to 150 a minute. Bulletin 50A.

These new machines combine speed, accuracy, versatility, ease of changeover, and many other operating features to provide totally new packaging efficiency and economy.

Be sure to see and compare them at Sundstrand Booth No. 223 where you can discuss your specific requirements with Sundstrand packaging engineers and can make arrangements for test runs at the Sundstrand Customer Service Laboratory.

For literature, write outlining your requirements.

SUNDSTRAND **SUNDSTRAND PACKAGING EQUIPMENT**

SUNDSTRAND-AMERICAN BROACH • ANN ARBOR, MICHIGAN • Division of SUNDSTRAND CORPORATION

Packaging Machinery Manufacturers Institute Show of 1961

On the following pages is a booth-by-booth listing of this year's PMMI exhibitors. Many of these include machines and equipment being shown for the first time, and the majority of displays will be "action exhibits," showing on the spot how the machinery performs packaging operations.

A-B-C Packaging Machine Corp.
Booth: 445 Hotel: Statler-Hilton
Exhibiting its Dialmizer automatic top and bottom case sealer. This unit has hermetically sealed and pressurized glue applicators; it sprays the glue on case flaps.

Abbott Plastic Machine Corp.
Booth: 243
Exhibiting its APM 14-1 automatic pressure-form machine for blister and food packaging containers. Also exhibiting skin and blister package vacuum-forming machine and right-angle slitter with mounted hole punch cutting machine.

Algene Marking Equipment Co.
Booth: 237
Exhibiting its flat box printer which prints all four sides of a range of boxes in one pass (with automatic hopper feeding), handling up to 4200 knocked-down boxes/hr. Also exhibiting its four-way printer, which prints and codes four sides of boxes in one pass.

Allen Hollander Co., Inc.
Booth: 704 Hotel: Statler-Hilton
Exhibiting for the first time its new automatic dispenser of pressure-sensitive labels which peels each label from the backing sheet and applies 3600/hr. Also exhibiting its Able-Stik pressure-sensitive marginal punch labels.

Aluminum Co. of America
Booth: 530
Exhibiting its complete line of aluminum closures, a variety of aluminum cans, and samples of printed foil.

A & M Tool & Die Co., Inc., Saga Packaging Machinery Div.
Booth: 616
Exhibiting a 22-station tube sealing machine that handles any plastic tube up to 2½ in. diameter and 10 in. long.

Amaco, Inc.
Booth: 945 Hotel: Statler-Hilton
Exhibiting the Hoefliger and Karg automatic packaging unit for long-cut macaroni, spaghetti, and similar long goods; automatic tablet tube filling and closing machine; and automatic tablet and pill counting machine.

American Engraving and Machine Co.
Booth: 158 Hotel: Statler-Hilton
Exhibiting its plate cylinders, meterflo-rollers for flexographic printing, coating rollers, and embossing rollers.

American Sterilizer Co.
Booth: 852 Hotel: Statler-Hilton
Exhibiting a combination gas-steam sterilizer for bulk sterilization of heat- and moisture-sensitive material. Also exhibiting a Can-O-Gas sterilizer.

American Viscose Corp.
Booth: 247 Hotel: Sheraton-Cadillac
Exhibiting its Avisco films, including film laminations and extrusion-coated cellophane. Also exhibiting Avistrap cord strapping plus tools and accessories for its use.

Amsco Packaging Machinery Co. Inc.
Booth: 611 Hotel: Pick-Fort Shelby
Exhibiting its Amscomatic 75 automatic sealer, which heat-seals polyethylene and other film packages; it handles the output of a single semiautomatic bag loading machine. Also exhibiting its Amscomatic 300 mobile ticketer/labeler, which applies pressure-sensitive labels.

Apex Machine Co.
Booth: 148
Exhibiting an air-operated hot stamping machine with rotary turntable feed; also exhibiting other automatic, semiautomatic, and hand-operated machines for marking various shapes and surfaces.

Arabol Manufacturing Co.
Booth: 829 Hotel: Detroit-Leland
Exhibiting the details of container adhesives and their applications. Arabol executives will be on hand to discuss problems and solutions inherent in each application and the machinery used with them.

Arenco Machine Co.
Booth: 518 Hotel: Statler-Hilton
Exhibiting its high-speed GAN tube filling machine using one operator and equipped with tube feed registration and tube cleaning. Also exhibiting its Alite A.T. 5 powder filling and compressing machine (which runs up to 16 units/min.) and its Alite L.F. powder filling machine.

Armed Forces, U.S. Air Force Logistics Command
Booth: 962
Exhibiting the teamwork between the Armed Forces and the packaging, materials handling, and transportation industries.

(Turn page)

For longer life and less down time specify Coes Knives on your new original equipment. These knives give you clean, true cuts that mean more production, finer quality and consistent performance.

COES
KNIFE COMPANY
62 COES STREET
WORCESTER, MASS.

SECRET FLAVOR...
AND IT'S PROTECTED WITH Patapar®

Habbersett Brothers, Inc., Philadelphia, has used Patapar Vegetable Parchment to protect the flavor of their secret scrapple mixture since the days when the product was sold in 15-pound tins. At that time, the surface cover for the scrapple was pure, tasteless, odorless Patapar.

Now, the handy one-pound and two-pound portions are protected and heat-sealed in packages made of pure, tasteless, odorless Patapar Vegetable Parchment distinctively printed with vegetable inks. The whole air-tight package is machine formed and heat-sealed in seconds.

Habbersett Brothers, Inc., uses a similar type package made of Patapar for their high quality sausage.

To lower packaging costs and assure your customers of consistent product quality, investigate the use of Heat-Sealing Patapar in your packaging operation. Name *your* product and we'll send free samples of the correct Heat-Sealing Patapar.

PATERSON PARCHMENT PAPER COMPANY
Bristol, Pennsylvania
NEW YORK, N.Y. CHICAGO, ILL. SUNNYVALE, CALIF.

Patapar®
VEGETABLE PARCHMENT

Atlas-Vac Machine Corp.
Booth: 736 Hotel: Pick-Fort Shelby
Exhibiting an automatic in-line form, feed, trim, and seal machine for packaging. Also exhibiting less automated packaging machines.

AviSun Corp.
Booth: 629 Hotel: Statler-Hilton
Exhibiting the new techniques of showing Olefane films. Also showing new types of films for heat sealing and the food industry.

Barkley and Dexter, Inc.
Booth: 201 Hotel: Sheraton-Cadillac
Its engineers and designers will be on hand with details of its custom service for industrial mechanization including an analysis of manufacturing operations, and development of mechanization methods.

Bartelt Engineering Co.
Booth: 500 Hotel: Sheraton-Cadillac
Exhibiting its automatic packaging equipment which forms, fills, and seals flexible pouches.

Battle Creek Packaging Machines, Inc.
Booth: 620 Hotel: Detroit-Leland
Exhibiting for the first time the Dial 155 Flexopaker with instant adjustability for pouch packaging through dial controls, and the Flow-Wrap semiautomatic wrapping machine. Also exhibiting Model 47-6A fast-flow wrapping machine operating at speeds from 100 to 120/min. and Model 475 polyethylene wrapping machine with both endfolding and underfold sealing and including a thermoplastic label applicator.

Bell-Mark Corp.
Booth: 216 Hotel: Sheraton-Cadillac
Exhibiting a bottom coder running at speeds to 650/min.; coders for registering imprint on various products; carton coders; Model 1240 printer on unwind stand for imprinting continuous web materials; and printers with double frame construction for imprinting up to 12 in. face width.

Bemis Bros. Bag Co.
Booth: 711
Exhibiting its range of bags, bailers, plastic bottles, paper containers, and bag closing equipment, including its machinery for bag feeding, filling, closing, sewing, coating, and printing. Also a new development will be introduced at the show.

Better Packages, Inc.
Booth: 227 Hotel: Sheraton-Cadillac
Exhibiting tape dispenser Models 555-S and 555-L with new top-tape heater for conditioning reinforced tape for manual application. Also exhibiting its Model 555 electric tape dispenser and Robot Repeater (with automatic dispenser for production runs of same sized cartons).

Biner Ellison Manufacturing Co.
Booth: 838 Hotel: Sheraton-Cadillac
Exhibiting its Labelmatic for spot or wrap-around labels. Unit runs at 20-60 bottles/min., handling flat, square, or odd-sized bottles.

Bivans Corp.
Booth: 433 Hotel: Prince Edward
Exhibiting its Convey-O-Mat, fitted with a printer and combined with its closing unit.

Stephen Bodolay Inc.
Booth: 906
Exhibiting for the first time its new Model 34 machine, which wraps textile items automatically at 30/min. using flat roll-stock polyethylene. This machine forms a bag, holds it open for loading, closes it; then seals, forms and delivers it.

Bowers Pattern Works
Booth: 145 **Hotel: Tower**
Exhibiting for the first time its automatic T-Lock Traymaker, which takes a flat sheet of paperboard and bends and locks the corners to make a packaging tray.

Brown Filling Machine Co.
Booth: 221 **Hotel: Sheraton-Cadillac**
Exhibiting its multiple packager which has a new gravity type liquid filling mechanism and an automatic supply system for the liquid hopper. Also exhibiting its Dual Formapak, which produces two packets per cycle (instead of one) and automatically fills and seals package-hardware items and powder products simultaneously.

John Burton Machine Corp.
Booth: 800
Exhibiting for the first time its machine to put DuPont Vexar netting on glass jars at speeds to 300/min. Also exhibiting its strip stamper (which applies liquor tax stamps at speeds to 200 bottles/min. with heat application to eliminate continuous compression of stamps) and its Cellubander, which automatically applies cellulose seals on bottles at speeds up to 210 containers/min.

C.I.T. Corp.
Booth: 934 **Hotel: Detroit-Leland**
Company officials will explain the latest financial methods for acquiring packaging machinery and equipment.

Cameron Machine Co.
Booth: 621 **Hotel: Cadillac House**
Exhibiting a new combination Center-Surface slitting and roll winding machine, capable of processing a wide range of plastic films, rewinding rolls up to 24 in. in diameter in excess of 1000 ft./min.

Chase Equipment Co.
Booth: 840 **Hotel: Statler-Hilton**
Exhibiting its Model 31 filling and plugging machine for filling and partially inserting rubber stoppers for lyophilization. Also exhibiting its Model 31 SC filling, plugging, and capping machine; its Model 22 semiautomatic stoppering machine for sorting and applying plastic clip caps on F-style cans; and AM2-SH piston filler.

Cherrin Products Co.
Booth: 224
Exhibiting its bag pack machine which makes polyethylene bags and seals them on all four sides in one operation, using power only when actually making the seal. Bag sizes the models of this machine handle range from postage stamp size to 30 x 30 in.

Chisholm-Ryder Co. of Pennsylvania
Booth: 648 **Hotel: Statler-Hilton**
Exhibiting a line of feeding, labeling, and filling equipment for plastic containers, featuring the following: New Way Model C-20 feed table; Model E-7 labeling machine, adapted for plastic containers; Model RGP-724 rotary liquid filling machine; and Model 25C incase liquid filling machine.

The Clark-Aiken Co.
Booth: 410 **Hotel: Statler-Hilton**
Exhibiting its 46-in. type GRS cutter for register sheeting with new rejection layboy for rejecting unacceptable sheets. Also exhibiting its shuttle-piler, air tables, lift tables, and stub arbors.

Cleveland-Detroit Corp.
Booth: 139 **Hotel: Statler-Hilton**
Exhibiting its Clamco Model 850 heat shrink tunnel. This is primarily for operations not warranting fully automatic machines. Also exhibiting its Model 750 wrapping unit and Model 280 automatic poly sealer; these items are designed chiefly for short run packaging.

Climax Products Div., The Lodge and Shipley Co.
Booth: 438 **Hotel: Pick-Fort Shelby**
Exhibiting for the first time its continuous uncaser which uncases up to 50 cases/min. (handling cans or bottles) with a continuous feed—no infeed timing required. Also exhibiting its continuous uncaser for one-way containers; its cycling-type uncaser with magnetic uncasing head for metal containers and its automatic four-flap case opener.

Clybourn Machine Corp.
Booth: 233 **Hotel: Detroit-Leland**
Exhibiting its high-speed tucked-end candy carton filling machine and its Model B continuous automatic carton filling machine with volumetric filler.

Arthur Colton Co.
Booth: 325 **Hotel: Statler-Hilton**
Exhibiting for the first time its Model 116 rotary piston filler rated at 320 containers/min. This 16-station machine fills containers from ¾ to 32 oz. and has an 8-pocket air feed and 12-pocket discharge star wheels. Also exhibiting tube fillers, cartridge fillers, and various piston fillers for liquids and semiviscous materials.

Comet Industries, Inc.
Booth: 946
Exhibiting its Quick Pak, an automatic skin packaging and slitting machine designed on a conveyor principle.

Conapac Corp.
Booth: 406 **Hotel: Sheraton-Cadillac**
Exhibiting for the first time its Millatron fully automatic horizontal injection molding machine for expandable polystyrene, and Rotojet, its rotary injection molding machine for making snap-on and threaded closures. Also exhibiting its form-seal unit which works from two webs of material to form-fill-seal rigid plastic containers.

Consolidated Pkg. Machinery Corp.
Booth: 434 **Hotel: Sheraton-Cadillac**
Exhibiting for the first time a new rotary crimper to crimp an aerosol valve after it goes into the container by hand or automatically, operating at speeds to 150/min. Also exhibiting for the first time its Model C-4-SC, new rotary crimper which runs up to 120/min., and its Model D-8 Faro 8-spindle rotary capper for applying aluminum pilfer-proof caps at speeds exceeding 200/min.

(Turn page)

BREAK THAT
MULTIPLE SHIPPING BOTTLENECK

If you regularly address 5 or more cartons per shipment, you can make important savings and avoid costly errors by addressing your multiple shipments with

STEN • C • LABLS*

As a by-product of office procedure

You can prepare STEN-C-LABLS at the same time as your invoice, order, bill of lading or shipping papers—whatever your procedure or equipment—manual or electric typewriters, electric billing or accounting machines, slave machines or various IDP systems.

Imprinting direct to PANL-LABL on carton

Your shipping department makes unlimited impressions with STEN-C-LABL Applicator direct to PANL-LABL printed on carton eliminating expensive, time-consuming gummed labels. All addressing errors, mis-shipments and repetitive writing are avoided.

DURABLY MARKED AND PLAINLY LEGIBLE at handling distance. A STEN-C-LABL address is sunproof and waterproof—becomes permanent part of carton. Reproduction is sharp and easy to read at handling distance.

You might be shocked . . .

. . . to find how antiquated and outdated your present method of addressing multiple shipments actually is. *Five minutes of your time* in checking your multiple shipping procedures may save you thousands of dollars!

Send for **FREE BROCHURE** *giving full details!*

STEN • C • LABL, INC.
Dept. PE-10, 1821 University Ave., St. Paul 4, Minn.

Please send me FREE BROCHURE on saving with STEN-C-LABLS.

Name_____

Company_____

Address_____

City_____ State_____

*Registered U.S. Pat. Off. The term STEN-C-LABL is the trademark and exclusive property of STEN-C-LABL, Inc. All STEN-C-LABLS are manufactured exclusively by STEN-C-LABL, Inc., St. Paul, Minn. under U.S. Pat. No. 2,771,026. Other patents pending. Also available in Canada.

FOUR... ...GOOD REASONS FOR YOU TO USE

jet-pak®

CUSHIONED-INSULATED SHIPPING BAG

1-Low Cost-

... For about three and a half cents each for No. 3 size in 10,000 quantities, JET-PAK is not the cheapest material to buy – but is by far the most inexpensive package to use. JET-PAK cuts packaging time per unit – ready for mailing – to 15 seconds or less. *Compare that with your present method!*

2-High Security-

... Passed sternest drop tests demanded by U. S. Postal Authorities with flying colors. JET-PAK also considered pilferage-proof. Secret is JET-PAK's one continuous, tough, Kraft paper sheet construction – so folded and glue-locked that never less than two thicknesses guard contents at all times plus four thicknesses on end-folds. *Compare that with your present method!*

3-Breakage Proof-

... Cushions contents with millions of tiny, resilient, paper particles. JET-PAK reduces breakage to an irreducible minimum. These same particles, combined with asphalt lamination, erect waterproof thermal barrier against both temperature and humidity. *Compare that with your present method!*

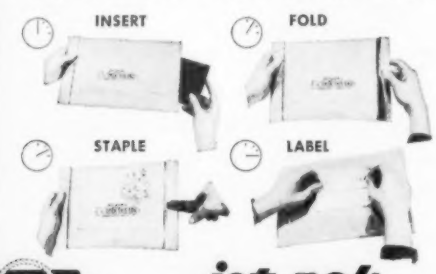
4-Simplicity-

... Completeness as a package so speeds packaging process that even unskilled direct labor time is cut by more than one-half. JET-PAK eliminates waste motion – needs no supplementary materials – makes no mess on the receiving end. Easy to open, JET-PAK discloses all contents – ends losses of small parts due to careless shipping or receiving practices. *Compare that to your present method!*

SEND... PROVE IT TO YOURSELF

Just clip this coupon to your letterhead and mail to:

FOR SET OF FREE SAMPLES



ROPE COLUMBIAN TWINES

jet-pak
Packaging Division
Columbian Rope Company
Auburn "The Cordage City" N. Y.

Container Equipment Corp.
Booth: 724 Hotel: Sheraton-Cadillac
Exhibiting its model 40-9½ LL two-station adjustable cartoner equipped with a product infeed conveyor and designed to handle an edge-lock or base-lock style carton. It handles each carton automatically from hoppering to closing, but allows for hand insertion of the product by one or two operators.

Continental Can Co.
Booth: 239 Hotel: Sheraton-Cadillac
Exhibiting a machine which runs Conolene roll stock. Also exhibiting various flexible packaging products.

Crompton & Knowles Packaging Corp., Redington and Wrap-King Divs.
Booth: 521 Hotel: Statler-Hilton
Exhibiting for the first time, Carton King, a high-speed automatic highly adjustable cartoning machine. Also exhibiting the standard and the pocket intake Automax; a case opener, a corrugated sleeve packaging machine for GE flash bulbs; a wrapping machine for all plastic films; and an overwrapping machine.

Crown Zellerbach Corp., Western-Waxide Div.
Booth: 926 Hotel: Cadillac House
Exhibiting its polyethylene slash paper pouches (run on Model CC packager) featuring the Crown tear-string concept; also exhibiting details on the technical and production facilities of its new speciality packaging center, St. Louis.

Cryovac Div., W. R. Grace & Co.
Booth: 615 Hotel: Cadillac House
Exhibiting for the first time SCM-IV shrink cover machine to apply a sheet of Cryovac shrinkable film over a rigid container; and a combination of automatic perimeter sealing and shrinking units to enclose flat rigid packages.

Delavan Manufacturing Co.
Booth: 441 Hotel: Sheraton-Cadillac
Exhibiting its Sonac ultrasonic, non-contact sensing and switching system together with applications showing its use for liquid or dry levels control and conveyor belt applications which include counting, sorting, routing, overheight signal, web-break detection, etc.

Delta Engineering Corp.
Booth: 646 Hotel: Statler-Hilton
Exhibiting its Model F universal counting machine for highspeed packaging operations involving short runs with a wide variety of products. It has a 60-sec. changeover without changing parts.

Dennison Manufacturing Co.
Booth: 832 Hotel: Sheraton-Cadillac
Exhibiting for the first time its machine to apply Therimage heat transfer to conical polyethylene bottles. Also exhibiting its Model TA-C-1 for labeling cartons in the flat and a machine showing application of Therimage heat transfer labels at the point of packaging on continuous flow web-fed overwrappers.

Derby Sealers Div., Minnesota Mining and Mfg. Co.
Booth: 545 Hotel: Harlan House
Exhibiting its new 310 electric gummed tape dispenser, designed to dispense both gummed and reinforced gummed tape by touch control. Also exhibiting

its pressure-sensitive tape dispensers, and label dispensers.

Dispens-A-Label Devices
Booth: 964
Exhibiting several models of dispensers for applying gummed labels by hand.

The Dobeckmun Co.
Booth: 833 Hotel: Statler-Hilton
Exhibiting for the first time its improved types of polyethylene package opening devices; a new cook-and-serve pouch; a Trycite overwrap for produce; and an improved skin-packaging film for use on untreated board. Also exhibiting its basic packaging films that include Polyfilm, Trycite, Saran Wrap, and laminated and extruded combinations.

Doughboy Industries, Inc.
Booth: 737 Hotel: Cadillac House
Exhibiting for the first time its auxiliary unit to make case and drum liners in connection with its chain band sealer. Also exhibiting its Model CP vertical packaging machine, Model CBS-CH band sealer with attachment for fabricating cases, drum liners, and large dimension bags.

E. I. duPont de Nemours and Co., Inc., Cel-O-Seal and Vexar Divs.
Booth: 923
Exhibiting new applications of Vexar plastic netting as a reusable stockinnette material for smoked meats, as cushioning to eliminate partitions, and pledgetting material for pill bottles. Also exhibiting Cel-O-Seal cellulose bands.

E. I. duPont de Nemours and Co., Inc., Film Dept.
Booth: 921 Hotel: Sheraton-Cadillac
Exhibiting its line of packaging films with details showing their machine efficiency in high-speed operation and their specific application to packaging needs.

John Dusenbery Co., Inc.
Booth: 633
Exhibiting a new Model 800 slitter-rewinder; a new salvage rewinder; and a photographic display of laminator Model 900.

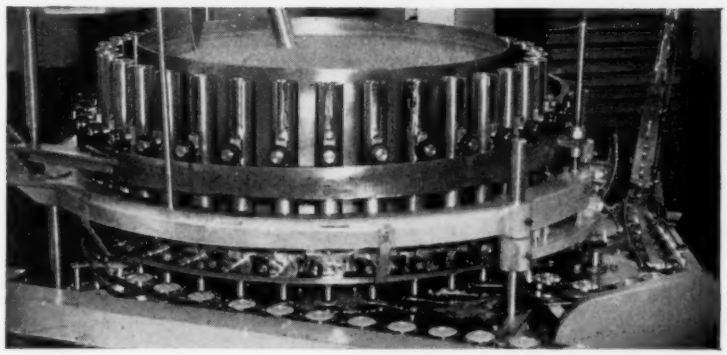
Economic Machinery Co.
Booth: 418 Hotel: Statler-Hilton
Exhibiting units of its automatic packaging machinery that include labeling machinery, fillers, case unloaders, case packers, feeders, feed-cleaners, etc.

Ekco-Alcoa Containers Inc.
Booth: 323
Exhibiting a new method of packing in aluminum foil.

Electronic Machine Parts Inc.
Booth: 700 Hotel: Sheraton-Cadillac
Exhibiting its new automatic registration control on flexographic and web offset printing presses. Also exhibiting its registration-control equipment for converting, packaging, and filling machines, including its one-way and two-way correction units.

Electronic Processes Corp.
Booth: 910
Exhibiting its new transistorized electronic temperature controllers, featuring servo indication and epoxy encapsulated circuitry, including the new 6000 Series indicating controller, 7000

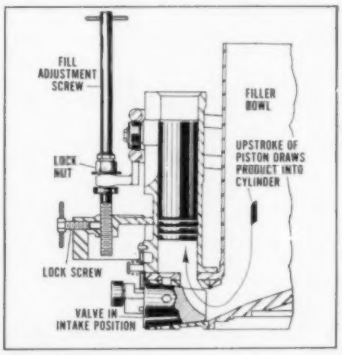
FLUIDICS* AT WORK



How to evaluate piston filler design in terms of profits

Take a look at the *total* design approach in a Pfaudler® rotary piston filler and you'll see how *every* factor can contribute to profits.

Start with the piston. Here you have the proper combination of smooth fit and small "cushion" so you can handle



products ranging from light, to heavy viscous fluids.

Accuracy is ±1/10 fluid ounce for most products. There's no surging, no splashing, no piston leakage.

Next check the *fill adjustment mechanism*. With a Pfaudler filler you can adjust fill accuracy from a single control point without dismantling or even stopping the filler.

Cleaning is simple and rapid. One man can do it thoroughly in one-half hour. He can do it without tools or hoists by removing only two parts per station,

the piston and valve. There are no gaskets to clean and refit, no adjustments to make after cleaning.

Lubrication is well provided for, since all grease fittings are tied in to very accessible headers. And all gears are submerged in oil.

Repairs are kept to a minimum, since there are only four primary wearing parts—piston and valve rollers, valve trip cam, and valve-lock wear pad. You will find that all are modestly priced, easy to stock and replace.

Over-all weight, and how it is supported, also should be considered. The sturdy base and over-all ruggedness are a hallmark of every Pfaudler filler.

Name the product, rate and container and you'll find a Pfaudler filler to handle it profitably. Choose from machines with 6 to 36 stations, to handle glass, paper, prepack or tin.

Get detailed specs by writing to our Pfaudler Division, Dept. PE-101 Rochester 3, New York.

*FLUIDICS is the Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

PFAUDLER PERMUTIT INC.
Specialists in FLUIDICS...the science of fluid processes

Series indicator and 9000 Series indicating controller.

Elgin Manufacturing Co.
Booth: 639 **Hotel: Statler-Hilton**
Exhibiting for the first time its Model JVP automatic wrapping machine for the wrapping of Vitafilm and its nonstop filling machine with plunging head. Also exhibiting its semiautomatic carton wrapper and single-valve filling machine.

Elliott Manufacturing Co.
Booth: 749
Exhibiting its Model 52-14 fully automatic top and bottom case gluer and sealer as well as its Model 200 labeling machine. Model 52-14, which is 14 ft. long, glues and compresses within the machine.

Emhart Manufacturing Co., Portland Div.
Booth: 330 **Hotel: Statler-Hilton**
Exhibiting a carton packer; 455 Glue-Liner gluer (pressureized glue system); and 677 Vertiseal compression unit—all working together.

Errich International Corp.
Booth: 701 **Hotel: Statler-Hilton**
Exhibiting for the first time models of its low-priced bagging and sealing equipment.

Ertel Engineering Corp.
Booth: 932 **Hotel: Statler-Hilton**
Exhibiting for the first time its Model A automatic straight-line bottle filler, electronically controlled and available as a vacuum or gravity filling unit. Also exhibiting for the first time a new line of stainless steel plate and frame filters.

European Packaging Digest
Booth: 708
Exhibiting details of its services and those of the French Packaging Institute available to American business.

Exact Weight Scale Co.
Booth: 220 **Hotel: Pick-Fort Shelby**
Exhibiting for the first time a high speed checkweigher and liquid filler. Also exhibiting its small package checkweigher (8-oz. capacity); its liquid filler by weight (50-lb. capacity); its automatic new weigher (3-lb. capacity), and various models of predetermined weight scales.

Ex-Cell-O Corp.
Booth: 533 **Hotel: Statler-Hilton**
Exhibiting for the first time a high capacity rotary cutter and creaser; a flexographic imprinting unit, made for users of Staude Gladiator cellophane window machines; and a high-speed straight line gluer for flame sealing polyethylene coated cartons.

Fairchild's Inc.
Booth: 804
Exhibiting its Model 33A packer.

Felins Tying Machine Co.
Booth: 105 **Hotel: Statler-Hilton**
Exhibiting two models of its Pak Tyer tying machine for packages, bundles, and boxes. These handle up to 50 single-tied or 30 cross-tied packages/min.

Ferguson Machine Co.
Booth: 109
Exhibiting its indexing and power-transmission components for increasing the production of packaging machinery. These include its roller gear drive indexing mechanisms, its Intermittor rotary machine base, its CamO index table and plate, face and barrel cams.

Fife Manufacturing Co.
Booth: 114 **Hotel: Balmar**
Exhibiting for the first time its new line of automatic web and cloth guiding power units featuring new power units on an operational model rewinder. Also exhibiting several different models of power units.

The Filler Machine Co.
Booth: 534
Exhibiting its Geyer heavy-duty Model SL-58 piston filling machine originally designed to handle from 4 to 32 oz. and now capable of handling from 4 oz. up to and including a No. 10 can. Changes from one side to another take 5-10/min.

The F. G. Findley Co.
Booth: 342 **Hotel: Detroit-Leland**
Exhibiting details and information about its range of adhesives for packaging and converting. This includes a demonstration of continuous adhesives running in an Acumeter applicator as well as heat sealing equipment for sealing substrates on which this adhesive has been applied.

Dave Fischbein Co.
Booth: 730 **Hotel: Sheraton-Cadillac**
Exhibiting for the first time its Model D portable bag closer. Also exhibiting its line of bag-closing equipment in-

Especially designed for packaging needs. Completely transistorized. Compact, tubeless, long service-free life. Choice of thermistors, probes, resistance bulbs, pressure transducers or humidity element sensors. Temperature control ranges available from minus 150° to plus 1400 ° F.
Write Honeywell, Minneapolis 8, Minn.

Honeywell
First in Controls

cluding portable and stationary models for multiwall paper or textile bags.

FMC Corp.
Booth: 605 Hotel: Statler-Hilton
Exhibiting its new Model 600 high-speed checkweigher which handles jars, bottles, cans, cartons, and pouches and bags up to 3 lb. at speeds to 300/min. Also exhibiting its new shrink-wrapping machine, Campbell wrapper, which forms, seals, and shrinks film automatically around a variety of product shapes and sizes at speeds to 60/min. Also exhibiting Stokeswrap 1000 pouch maker; its transparent lid forming machine; and its Model 210 bag maker.

FMC Corp., Canning Machinery Div.
Booth: 624 Hotel: Statler-Hilton
Exhibiting for the first time its Model HEC horizontal type cartoning machine, which automatically sets up cartons, presents them for manual loading, and then closes filled cartons. Also exhibiting its Model R 200 F caser.

George H. Fry Co.
Booth: 346 Hotel: Pick-Fort Shelby
Exhibiting for the first time its automatic paper bag closing line; Model V30A package vibrator; conveyor Model GS 54-10C and vibrator, automatic tucker and closing machine.

H. B. Fuller Co.
Booth: 748
Exhibiting specific adhesive products for a variety of applications; also exhibiting resin No. 1555 for gluing folding cartons with all types of surfaces.

General Atronics Corp.
Booth: 240
Exhibiting a new parts counter which bulk counts and batches in small lots, handling up to 450,000 items/hr. It handles sizes and shapes from paper clips and fasteners to candy and drug capsules.

General Corrugated Machinery Co. Inc.
Booth: 916
Exhibiting its new Mighty Midget case sealer Model 950, with a new method of adhesive application. This machine indexes cases, closes top flaps, and completes the sealing operation on average case sizes at speeds to 50/min. in an over-all machine length of 9 ft.

General Food Equipment, Inc.
Booth: 948 Hotel: Statler-Hilton
Exhibiting its multi-pak case packer; universal case packer; and integrated high-speed strip spray gluer and compression unit, primarily intended for use in canning and bottling. Also exhibiting its empty can, full can, and glass container palletizing and depalletizing equipment and case palletizer.

General Packaging Equipment Co.
Booth: 230 Hotel: Statler-Hilton
Exhibiting automatic form-fill packaging machines for powder products.

Adolph Gottscho, Inc.
Booth: 519 Hotel: Sheraton-Cadillac
Exhibiting 24 different machines including its 790 Rolaprinter for imprinting large areas on corrugated boxes; 470 Rolacoder for coding case and box bottoms; automatic consecutive case numbering machine; and Model T dry process Wrapaprinta min-

LITTLE CONVENIENCES ADD UP TO ... BOOTH 946

Packaging Machinery Manufacturers' Institute
Cobo Hall — Detroit
Nov. 7-10

big SAVINGS IN Visual Packaging!

with Comet "Quick Pak" Skin & Blister PACKAGING MACHINE

Up-to-the-minute improvements in design and operation of Comet Packaging Machines have increased production and cut cost on Visual Packaging.

The Modern Way to Better Sales

Visual Packaging . . . of hundreds of products is proving to be the most economical and practical way to package for faster sales. It will pay you to investigate.

Write for Packaging Bulletin MQB.

COMET INDUSTRIES, INC.
FRANKLIN PARK, ILLINOIS

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Adjust Fill Height while operating...

Horix now offers, as an optional part on its high speed fillers, an in-motion fill height adjustment. With this power-driven mechanism, adjustments to compensate for product temperature or atmospheric changes, can be made simply, conveniently, while the machine is operating at top speed. It is a real money saver for processors handling distilled spirits, wines or other valuable products.

Combined with the exceptional filling accuracy built into all Horix Fillers, this new device gives processors absolute control of product fill throughout entire filling operation.

Write for complete facts.

HORIX
MANUFACTURING COMPANY, PITTSBURGH 4, PA.
FILLERS AND CONVEYORS

H-2

see the finest packaging machinery ever built!

HORIX
Booth 628
Packaging Machinery Manufacturers' Institute Show

Nov. 7-10
COBO HALL
DETROIT

For more information circle No. 277 on Reader Service Card

iature attachment for imprinting flexible materials.

Griffin-Rutgers Inc.
Booth: 117
Exhibiting its label dating and coding machine for bottlers and other food, drug, and cosmetic manufacturers.

Hayssen Manufacturing Co.
Booth: 319
Exhibiting its new Model RT horizontal continuous packaging machine which forms, fills and seals bags at speeds to 100/min. without cards or stiffeners.

Heinrich Equipment Corp.
Booth: 440 Hotel: Statler-Hilton
Exhibiting its redesigned model Lilliput-62 narrow-width flexographic roll press with two-station unwinder, two-station friction rewinder, slitting and overhead drying system. Also exhibiting bags handled on its T-1441 handle forming and gluing machine.

Fr. Hesser
Booth: 437 Hotel: Cadillac House
Exhibiting its packaging machine for single cartons with seal spout attachment and connected cellophane wrapping machine. This battery of equipment sets up, fills, and closes cartons; then overwraps them in cellophane at 80/min.

Hi-Speed Checkweigher Co., Inc.
Booth: 729 Hotel: Statler-Hilton
Exhibiting for the first time a new level checkweighing device that operates in conjunction with Model PA-57 checkweigher to provide height fill check along with weight check. Also exhibiting its CV-2 converger (using a geneva drive principle for converging empty or full cartons) and checkweighers and weight indicator-recorders.

Hobbs Manufacturing Co.
Booth: 138 Hotel: Pick-Fort Shelby
Exhibiting its Model 2CTHM75-DCS cantilevered turret winder with DC-powered Vers-A-Wind drive. Also exhibiting its CHP winding drives and its Autogil automatic roll-fed guillotine cutters.

Horix Manufacturing Co.
Booth: 628 Hotel: Statler-Hilton
Exhibiting a high-speed filler, featuring container handling and in-motion fill-height adjustment.

Huntingdon Industries, Inc.
Booth: 538 Hotel: Pick-Fort Shelby
Exhibiting for the first time its Form-packer for opening corrugated boxes—it forms the bottom, conveys the box, packs it, seals it.

Illumitronic Systems Corp.
Booth: 944
Exhibiting for the first time its underweight rejector, Model UWR-1, and its automatic checkweigher for detection and rejection of underweight, closed containers.

The Inta-Roto Machine Co., Inc.
Booth: 823 Hotel: Sheraton-Cadillac
Exhibiting its K.S. 7-A duplex slitter-winder for processing lightweight materials of varying caliper, films, laminated materials, and printed papers, using either the shear cut or razor blade method of slitting, with electronic controls for constant tension.

Island Equipment Corp.
Booth: 627
Exhibiting its rotary unscrambling and accumulating tables as well as take-away conveyors, unitized conveyors, straight-line unscrambling tables, and other units. Some of these are available with anodized aluminum frames colored in green and gold.

Ivers-Lee Co.
Booth: 600 Hotel: Statler-Hilton
Exhibiting its See-V Sealtite, a new method of opening unit packages; its Conture unit packages; its Supposi-form suppository packaging; and its unit packages and equipment details.

R. A. Jones and Co., Inc.
Booth: 508 Hotel: Sheraton-Cadillac
Exhibiting equipment representing its complete line of cartoning systems.

Oscar I. Judelshon, Inc.
Booth: 104 Hotel: Cadillac House
Exhibiting its new Unicut electronic double knife roll cutter which slits a roll of film without rewinding.

The Kartridg Pak Co.
Booth: 124
Exhibiting its Chub machine and its aerosol undercap filler.

Kidder Press Co., Inc.
Booth: 217 Hotel: Statler-Hilton
Exhibiting illustrations and details of its letterpress, flexographic, and gravure presses.

DO YOU CONDUCT PLANT TOURS FOR THE PUBLIC?

Many plants throughout the country conduct tours for organizations as well as the general public. Many of these plants have the equipment furnished in stainless steel.

Now you can have *COLOR* on your equipment by ordering our standard Unitized Conveyors, Narrow Belt, Ultimate and Rotary Tables in anodized aluminum construction for less than stainless steel and really be proud of the looks of your equipment.

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CONVEYORS

The perfect mechanized table for assembly, inspection, packaging, or general purpose conveying. Portable or stationary — available in fixed or variable speed — available in 8" — 12" — 16" — 18" — 24" — 30" or 36" widths—available in gold, green, red or chartreuse anodizing.

ROTARY TABLES

Unscramblers, Surge Tables or Accumulating Tables in standard disc diameters of 30" — 36" and 42" available with chassis in anodized colors and disc & guards in stainless steel.

This anodized aluminum will add beauty to any production line.

See our Exhibit PMMI Show, Cobo Hall, Detroit, Booth 627, Nov. 7-10, 1961
For more information circle No. 278 on Reader Service Card

The Karl Kiefer Machine Co.
Booth: 816 Hotel: Thunderbird Motel
Exhibiting for the first time its No. 3 12-station rotary pin point filler and 8-station Vari-Visco volumetric filler. The pin point filler is of the constant level type which effects the fill of a container without sealing it. Also exhibiting a Mono-Piston semiautomatic volumetric filler, a gravimetric filler, and gas pressure aerosol charging machine.

Labelette Co.
Booth: 744 Hotel: Statler-Hilton
Exhibiting Model 14C can labeler, which affixes spot face or wraparound labels on half-pint, pint, quart, or gallon round containers, handling up to 16 1-gal. cans/hr. Also exhibiting its 11A, 11B, and 12B Lab-L-Round labelers.

The Lakso Co., Inc.
Booth: 446 Hotel: Statler-Hilton
Exhibiting for the first time its Model 58 multi-track electronic counter; its Model 65 wadding machine, which puts a cushion instead of cotton into tablet and capsule bottles; its PS-100 label dispenser; and its 52 inverted U cottoning machine, which puts coil cotton in bottles in a new way. Also exhibiting its Model 56 inspection machine with a new capsule inspecting device.

Long and Co., Inc.
Booth: 920
Exhibiting three Atlantic labelers: Model 3 is semiautomatic, applies spot and wrap-around labels; 4A, a fully automatic version of 3, it requires no change parts; 10, automatic wrap-around labeler primarily for aerosols and paints.

Lynch Corp.
Booth: 425 Hotel: Statler-Hilton
Exhibiting for the first time its Model A Wrap-O-Matic machine, an improved Model CTF machine. Also exhibiting other units of wrapping, cartoning, packaging, and bucket elevating equipment.

MA System
Booth: 760
Exhibiting for the first time the MA-70 packaging system, featuring panel controls in front allowing the operator to change bag size in seconds, packaging any shaped object up to 30 x 30 x 5 in. in polyethylene film sealed on three or four sides; also exhibiting the MAS-70 slide pack packaging system, an improved model of a former system, designed to permit packaging traypacks.

Marathon, A Div. of American Can Co.
Booth: 340
Exhibiting its line of flexible and rigid packaging.

Markem Machine Co.
Booth: 335
Exhibiting its new Model 152A box marker, 157A bakery label printer, its unitized printing heads, its U1036 cylindrical printer, and its new rotary printer.

Marsh Stencil Machine Co.
Booth: 732 Hotel: Cadillac House
Exhibiting its new FR-100 fountain roller in which stencil ink is pumped, fed from a reservoir to the inside core of a foam rubber roller. Also exhibiting its full line of stencil cutting ma-

INLAND SPEED-FLO®

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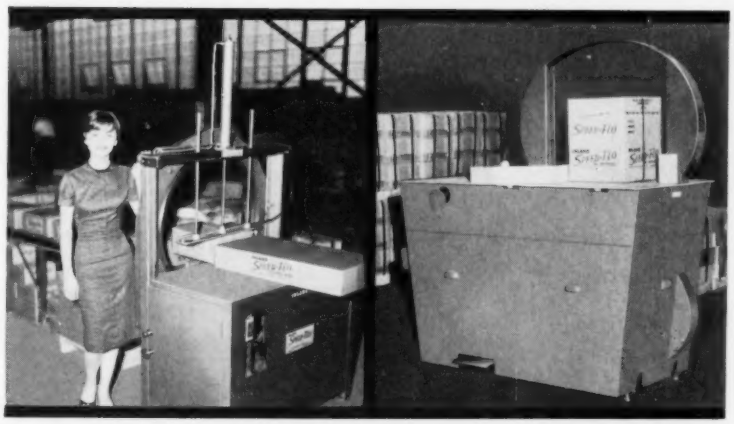
FULLY AUTOMATIC

ROUND AND FLAT STEEL STRAPPING MACHINES

(INLANDGINEERED* to the job)



Versatile and compact, the new SPEED-FLO® Round Wire Strapping Machine accurately tensions and ties wire *averaging 1,000 ties* per hour at 90% efficiency. Can be easily adjusted to automatically handle high bulky packages or irregular shaped bundles. Adapts to both in-line and angular conveying.

**Custom installed by INLAND Engineers.*

The revolutionary Inland SPEED-FLO® Seal-less Flat Steel Strapping Machine feeds, tensions and seals ⅜ x .015 flat steel strapping around package *in one completely automatic cycle*. Quickly and economically reinforces packages of infinite length and tying repetition. Has seal strength that exceeds all packaging and shipping requirements.

ALSO . . . a full line of SPEED-FLO® Semi-Automatic and Manual Tying machines for countless industrial applications. SPEED-FLO® strapping is available in all standard and special gauges; galvanized or coppered; in 5 to 500-lb. units.

INLAND SPEED-FLO® Stitching Wire—Stitch or staple fiber and corrugated boxes and shipping containers with high strength, consistent quality SPEED-FLO® stitching wire. Furnished in all standard sizes with galvanized or copper finish.

INLAND SPEED-STITCHERS®—Featuring the Wide Crown Bottomer and four other models with head sizes from 12 to 36 inches. Maximum capacities of 375-point (⅜") board. Electric Solenoid Trip also available.

For further details, samples, catalog sheets and prices, as well as machine lease and sale agreement information, write today:

INLAND SPEED-FLO® PRODUCTS
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As fine as its Wind . . . the best Wind in the industry!

chines, electric tape dispensing units, and other marking equipment and accessories.

G. Diehl Mateer Co.
Booth: 341
Exhibiting its line of standard liquid and powder fillers for drugs, foods, and chemicals. Also exhibiting proportioning, mixing, and dispensing equipment for reactive compounds and showing motion pictures of its new high-speed rotary filler.

Mead Packaging Co.
Booth: 909 Hotel: Statler-Hilton
Exhibiting its Cluster-Pack system for cans or glass and exhibiting packages illustrating the application of this system.

Mercury Heat Sealing Equipment Co.
Booth: 155 Hotel: Pick-Fort Shelby
Exhibiting for the first time its automatic bag labeling machine to fit under any form-and-fill machine. This unit puts a saddle or header label on the top of completed packages coming off the form-and-fill unit. Also exhibiting Verti-Pak Model U and its semiautomatic bag labeling machine.

Mettler Instrument Corp.
Booth: 936
Exhibiting for the first time its straight-line checkweighing system for handling general low weight package goods and also its new checkweighing system for automatic statistical control of pharmaceutical tablets.

Michigan State University
Booth: 842
Exhibiting details of MSU's research program available to industry on a multi-sponsor basis. Also exhibiting details of packaging education available at MSU.

Miller Hydro Co.
Booth: 315 Hotel: Sheraton-Cadillac
Exhibiting its new Model R2 case packer, handling Mason-type jars and its R2R unit for packaging odd-shaped bottles.

Miller Wrapping and Sealing Machine Co.
Booth: 717 Hotel: Balmar
Exhibiting for the first time its Corley-Miller Airtronic polyethylene bag maker with automatic stacker and its Corley-Miller Model BL-2-24 sheeting machine, a smaller version of its regular model BL-2.

Milprint, Inc.
Booth: 819 Hotel: Sheraton-Cadillac
Exhibiting its Kettle-Redi (polyester/polyethylene lamination with locked in reverse printing) boil-in pouch. Also exhibiting its Milsheen scuff-resistant coating to give a high sheen finish to paper, and its Milcoat paper as well as its complete line of packaging materials and products.

Mira-Pak Inc.
Booth: 128 Hotel: Detroit-Leland
Exhibiting its new Mira-Wrap Series 9000 automatic flexible machines in two twin former models, handling either single- or double-wall bags. In two steps, this machine (1) premeters the exact amount of material required from a roll and (2) holds it at both ends and stabilizes tension during wrapping.

The Monarch Marking System Co.
Booth: 222 Hotel: Thunderbird
Exhibiting its Sensomatic unit, which automatically imprints and attaches labels to packages. It consists of one unit of an imprinting machine tied into an applicator for automatic application of pressure-sensitive labels to packages.

Morningstar-Paisley Inc.
Booth: 108
Exhibiting its line of Super-Rez adhesives for high-speed carton sealing, and 87-1866 window adhesive, for bonding acetate, Trycite, or cellophane to uncoated board stock.

Mosstype Corp.
Booth: 211 Hotel: Sheraton-Cadillac
Exhibiting a service center for rubber plate printers and featuring a mounterproofer machine; D-Mount plate cylinder; Pin-set self-locating and Hugtite brass-back rubber plates with hold-down bands and gripper tool; Plate-kote spray coating for rubber plates and rubber plate wash for plate cleaning.

MRM Co. Inc.
Booth: 514 Hotel: Wolverine
Exhibiting high-speed automatic labeling machinery and straight-line semiautomatic and rotary automatic filling machinery. Also exhibiting a continuous motion labeler, a straightline gravity filler, and a rotary filler.

J. M. Nash Co., Inc.
Booth: 806
Exhibiting for the first time its new Nash-Pak 500 packaging machine, which heat-seals or impulse seals a

see how it wraps!

4 STEPS!

new "OLIVER" No. 898

SEMI-AUTOMATIC WRAPPING MACHINE SERVES A WIDE VARIETY OF WRAPPING NEEDS — uses roll-type, continuous web overwrapping films, and **does the job faster — with minimum hand operations.** Machine makes all folds automatically — not even the first fold is done by hand! Takes packages from 3½" to 15" in length; from 3½" to 8½" in width; from 1½" to 6" in height. Film size capacity: roll width, from 6" to 21"; cut-off length, from 11½" to 27½". Speed: up to 23 packages per minute.

WRITE FOR COMPLETE DETAILS

BOOTH 539-541
SEE OUR DISPLAY
PACKAGING MACHINERY MANUFACTURERS INSTITUTE
SHOW
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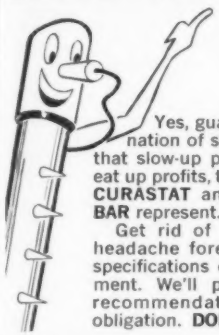
NOV. 7th thru 10, 1961

OLIVER
MACHINERY COMPANY
PACKAGING DIVISION
GRAND RAPIDS 2, MICHIGAN

We don't just sell static eliminators

WE SELL STATIC

ELIMINATION—



Yes, guaranteed elimination of static problems that slow-up production and eat up profits, that's what our **CURASTAT** and **OXY COLD BAR** represent.

Get rid of static-caused headache forever. Send us specifications of your equipment. We'll provide expert recommendations without obligation. **DON'T DELAY!**

1-196

HERBERT PRODUCTS, INC.
186 LINDEN AVENUE • WESTBURY, N. Y.

Circle No. 281 on Card

end costly overweights

***speed* production**

Packagers of dry powdered, granular or crystalline materials can do the job more economically on the right model of Gump-built Equipment. Weighers for manual lines—up to 50-pound discharges. Automatic bag feeding, opening, weighing and ejecting equipment (illustrated). Automatic can, jar or carton lines. Accurate weights and speedy, dependable operation save product and packaging labor. *Choose your equipment to fit the job.* Write for recommendations—tell us the material, weight, container, and capacity.

B. F. GUMP CO.
1346 S. Cicero Ave., Chicago 50, Ill.

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range of package sizes. It packages solids, liquids, and powders all on the same unit, with sizes up to 8 x 14 in.

National Equipment Corp.
Booth: 925 Hotel: Statler-Hilton
Exhibiting its Short-a-Matic case sealer and a Rose high-speed hard candy wrapping machine. The automatic case sealer has a glue valve applicator and gravity glue feed.

National Flexible Packaging Assn.
Booth: 912 Hotel: Sheraton-Cadillac
Exhibiting the winning packages in the 6th Annual National Flexible Packaging Competition.

National Starch and Chemical Corp.
Booth: 725 Hotel: Sheraton-Cadillac
Exhibiting a new wheel applicator demonstrating its Instant-Lok granular hot-melt adhesives for carton sealing; also exhibiting samples of products coated with its Resyn 3600, polyvinylidene chloride latex, and products fabricated with its Resyn 33-8012 adhesive for foil laminations.

The Nevins Co.
Booth: 824 Hotel: Statler-Hilton
Exhibiting for the first time its NC-5 Stretch-Pak packaging machine.

New Jersey Machine Corp.
Booth: 435 Hotel: Sheraton-Cadillac
Exhibiting for the first time its Pony 120 automatic labeler for round bottles, using a suction label handling and micro-controlled over-all gluing, at speeds to 130 containers/min. Also exhibiting the Pony-Label semiautomatic labeling machine utilizing roll-fed thermo-plastic master labels.

Olin Mathieson Chemical Corp.
Booth: Registration Center
Hotel: Statler-Hilton
Its booth will be a message center serving as a clearing house for messages for visitors and exhibitors, with bulletin boards for messages and a staff of messengers to deliver them.

Oliver Machinery Co.
Booth: 541 Hotel: Balmar
Exhibiting for the first time its No. 898 semiautomatic wrapper and its all new No. 886-RT labeler which uses a new principle of label transfer to the package surfaced or film being used for overwrap; also its No. 899 soft film wrapper and its No. 804 package-top labeler and 900 label imprinter-rewinder.

Olofsson Corp.
Booth: 705 Hotel: Statler-Hilton
Exhibiting a 15-pocket new weigher (with speeds to 120/min.) for cereals, noodles, etc.

Package Engineering
Booth: 339 Hotel: Statler-Hilton
Angus J. Ray, publisher; R. Bruce Holmgren, editor; Lee B. Bergstrom; Donald R. Crane; Arnold Gieseler; William H. Mathée, Jr.; Irwin F. Megargee; David L. Olsson; and Harry E. Vick, Jr. will be in attendance.

(Turn page)

ALL-PURPOSE SHIPPING BAG

SPEEDS HANDLING

PROTECTS SURFACES

Here's light-weight, fast-handling protection for parts shipped in master cartons, as a wrap for replacement parts shipment, or for in-plant storage of finished parts. Corro-Bags open easily, can be stapled or taped closed. Cushioning protection is literally built in, no shredded bulky fillers to add weight and to spill out if bag is punctured. Low-cost Corro-Bags are available in a complete range of standard sizes from your nearby Sherman distributor. For a size range of samples, write Department P.

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bank on BECK to help you beat the profit squeeze

This high volume production machine takes relatively little floor space . . . boosts output with speedy, easy operation . . . reduces waste with accurate cutting . . . and permits fast change-over of sheet sizes. Find out how a Beck Sheet Cutter can brighten *your* profit picture.

BECK Sheeter Model HLP

BECK Sheeter Model H

9 models of sheeters

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economy
accuracy
versatility
high volume

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cut anything that comes in rolls . . .

Write for details and illustrated bulletin.

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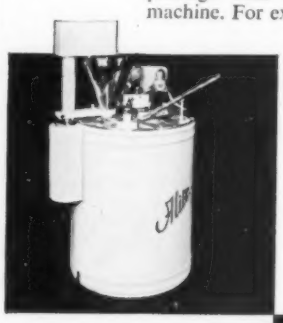
SHEET CUTTERS / SLITTERS / SHEETER-PRINTER / CAN IMPRINTER / BOX LIDDER / TEAR STRIPPER

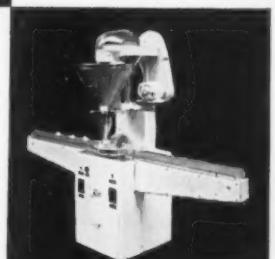
Circle No. 284 on Card

...One of the few "containers" an **ALITE** machine doesn't fill!

But keep in mind: *"If it's pasty, powdery and pours, there's an Alite to do the pouring."* Drugs in 8-milligram vials . . . mustard in 3-pound tins . . . make-up in compacts . . . flour in 2-pound bags . . . you can put virtually any-type product into any-type package with a specially designed Alite machine. For example:



Fills up to 1200 powder compacts per hour. Arenco-Alite A. T. 5 powder-compressor is fully automatic, dispenses any powder concentration evenly, accurately. Pressure completely variable from 40 to 1000 psi with merely the turn of a knob. Handles any-size compact from 1"-4", requires no air supply or other "extras."



16, 32 or 48 fills per minute. Alite loose-filling machine speeds dispensing of powders, grain substances, even pastes, with an economical accessory. Fills containers as small as ¼ oz., as large as 3-pounds-plus. Hopper and working parts can be stripped, cleaned and re-assembled in minutes.

And these are only two members of the Alite family of powder-filling, -compressing and batch-mixing equipment. For complete information, write today.

ARENCO

ARENCO MACHINE COMPANY

INCORPORATED

25 West 43rd Street, New York 36, N. Y.

Circle No. 285 on Card

Package Machinery Co.
Booth: 526 Hotel: Sheraton-Cadillac
Exhibiting its Transwrap S-750, equipped with net weight scales, which automatically forms, fills, and seals, polyethylene bags at the rate of 60/min.; its Model FFH high-speed wrapping machine, overwrapping up to 160 frozen food cartons/min.; and its Phin strip stamp machine.

Packaging Industries Ltd., Inc.
Booth: 638 Hotel: Statler-Hilton
Exhibiting for the first time its F-2 blister film top heat-sealing machine. Also exhibiting its automatic film top heat-sealing machine (which heat seals film covers to pre-filled formed containers for frozen foods).

Packaging Institute, Inc.
Booth: 154
The Institute will sponsor a hospitality booth which will also serve as a message center. Its publications will be on display.

Pak-Rapid Inc.
Booth: 706 Hotel: Pick-Fort Shelby
Exhibiting its Model HT tablet packaging machine.

Pamarco Inc.
Booth: 338
Exhibiting its Evenflo engraved rolls, embossing rolls, gravure engraving and base cylinders, integral plate cylinders, Micro-Lok demountable plate cylinders, chrome and copper plated rolls, idler rolls, and rubber covered cores.

Paper Converting Machine Co.
Booth: 817 Hotel: Detroit-Leland
Exhibiting for the first time details of its new orbital log saw. Also exhibiting illustrations and information on its automatic rewinders, folders, and core machines as well as four-color and six-color flexographic and letterpress units.

Perry Industries, Inc.
Booth: 141
Exhibiting for the first time a small conveyor for handling pharmceutical vials and similar containers; Models D and E Perry Accofil powder fillers; Accofil lab gun; peristopper; unscrambler and accumulator; small chain conveyor.

Peters Machinery Co.
Booth: 515
Exhibiting Model PG-L carton forming and gluing machine which operates at up to 70/min. and features a closed glue system. Also exhibiting Model SG automatic high-speed carton forming and gluing machine.

Plast-O-Craft Co., Inc.
Booth: 157 Hotel: Pick-Fort Shelby
Exhibiting for the first time a revised 400A machine, a vacuum former for blister packaging and other forms of thermo-forming; also exhibiting a trimming machine to contour trim any shape, handling material from 3 to 100 mil, with the equivalent of a 100 ton press.

Pneumatic Scale Corp., Ltd.
Booth: 334 Hotel: Sheraton-Cadillac
Exhibiting for the first time a 32-head all-purpose filler. Also exhibiting automatic high-speed bottling line consisting of unscrambling, air cleaning, liquid filling, and screw capping units.

(Turn page)

DERBY
DISPENS-A-PLY
PRODUCT LABELER

PRODUCTION LABELING and PRICE LABELING

with Pressure-Sensitive Labels . . . Dispensed and Applied

Automatically

The flexibility of the Derby Dispens-A-Ply Product Labeler is demonstrated by many diverse field installations. A cosmetic manufacturer identifies the color shade of lipsticks on the containers with pressure-sensitive labels . . . a meat packer labels products of many shapes and sizes with a single installation . . . a candy manufacturer labels film wrappings for boxed confectionery . . . distributors price-label nationally-known products . . . and there are many other examples of sale-price labeling, premium deal labeling and special offers requiring spot labeling . . . all applied with the versatile Derby Dispens-A-Ply.

See the Derby Dispens-A-Ply in action at the P.M.M.I. SHOW IN DETROIT NOV. 7-10 Booth #545

DERBY SEALERS DIVISION
MINNESOTA MINING AND MANUFACTURING COMPANY
DERBY, CONNECTICUT

3M COMPANY
. . . WHERE RESEARCH IS THE KEY TO TOMORROW

For more information circle No. 286 on Reader Service Card

Popper and Sons, Inc.
Booth: 120 Hotel: Pick-Fort Shelby
Exhibiting for the first time its automatic plugging machine. Also exhibiting its two automatic piston fillers.

Potdevin Machine Co.
Booth: 522 Hotel: Sheraton-Cadillac
Exhibiting for the first time its Web-Wrap packaging machine which packages from a continuously flowing web, handling a range of heat-seal materials, and operating at speeds to 300/min. Also exhibiting its 6-in. label activator; Type Z 27-in. gluer; and LM 6-in. label paster.

Pratt Manufacturing Corp.
Booth: 149 Hotel: Statler-Hilton
Exhibiting for the first time its two-color rotogravure unit with sheeting attachment. Also exhibiting its form-fill-seal machine and its perforator.

Pyroxylin Products, Inc.
Booth: 928 Hotel: Pick-Fort Shelby
Exhibiting details and information on its lacquer and hot-melt materials used for adhesives, protective coatings, functional coatings, paper, aluminum foil, films, glassine, and adhesives for skin and blister packaging as well as wax additives and fortifying agents for coating and laminating.

Resina Automatic Machinery Co., Inc.
Booth: 331 Hotel: Sheraton-Cadillac
Exhibiting for the first time an automatic machine for selection and application of pre-threaded pilfer-proof aluminum screw caps. Also exhibiting its Model PB automatic restriction plug inserter operating in tandem with an RU-200 screw capper and a snap-on fitment applicator. Also its crimp cap applicator, a single-station automatic straightline unit.

Riegel Paper Corp.
Booth: 610 Hotel: Sheraton-Cadillac
Exhibiting details of its complete packaging service concept with examples of cartons made with Foldcote solid bleached carton board, folding cartons, flexible packaging including pouches, bags and cartons liners, packaging for textiles, and examples of industrial films and laminations. Also exhibiting a unit of Bartelt machinery.

St. Regis Paper Co.
Booth: 741 Hotel: Statler-Hilton
Exhibiting its new BAX high-speed can packaging system as well as its bag packaging machinery and custom packaging machinery.

Scandia Packaging Machinery Co.
Booth: 511 Hotel: Statler-Hilton
Exhibiting its Model 110 fully automatic multi-purpose wrapping machine, a medium-speed bundler for such items as pipe tobacco, cosmetics, drugs and candy, single packages, supermarket multiples, and holiday packs.

R. P. Scherer Corp.
Booth: 159
Exhibiting several machines for the manufacture and packaging of hard and soft shell capsules.

G. T. Schjeldahl Co.
Booth: 801 Hotel: Statler-Hilton
Exhibiting a sealing machine for the hermetic seal of biaxially oriented polystyrene and its Model 108 Split Roll side-weld bag machine with bottom seal attachment.

Schooler Mfg. Co.
Booth: 100
Exhibiting a new wrapping machine.

Schroeder Machines Corp.
Booth: 805 Hotel: Cadillac House
Exhibiting for the first time its Quadnumatic compact case opener, former, packer and sealer—6 ft. long, 30 in. wide. Also exhibiting its Formnumatic case opener and former, and its case sealer unit that automatically glue-seals the top and bottom of cases.

Shopsin Paper Co.
Booth: 102 Hotel: Pick-Fort Shelby
Exhibiting for the first time its foil laminates, with heat seal coating on the back, for heat-seal machines. Also exhibiting a complete line of foil laminations in gold, silver, and other colors on base papers (gummed and ungummed) for all types of printing.

Simplatrol Products Corp.
Booth: 140
Exhibiting its fixed field clutch Size 130, which is 5 in. in diameter and has a static torque rating of 50 lb.-ft.

Smico
Booth: 810 Hotel: Statler-Hilton
Exhibiting its Tornado Mark IV volu-

MA SYSTEM FOR AUTOMATED POLYETHYLENE PACKAGING
Send for tell-all folder on the new MA System that packages all kinds of products in polyethylene in just one operation. Shows how you can save up to 50% in materials and labor costs by producing your own packages from polyethylene roll stock.

FREE SAMPLE PACKAGING—You can have your product test-packaged by the MA System. Indicate loose or shrink-fit polyethylene package and send your product to: Mehl Manufacturing Company, 2057 Reading Road, Cincinnati 2, Ohio.

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TOUGH NUT?
Packaging or converting costs pinching profits too tight for comfort? You can crack your way out of a spot like this—easy. Just put the squeeze on FINDLEYS. Their high-speed resin adhesives have cracked plenty of tough-nut problems, what's yours?
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INDUSTRIAL ADHESIVES
exclusively

Dept. P.E., Milwaukee 45, Wisconsin

Circle No. 287 on Card

Circle No. 288 on Card

metric packer to pick up and open paper bags, from 10 to 25 lb.; it fills, weighs, and delivers bags for sealing. Also exhibiting the inline bale cover sealer for bales carrying various size packages.

Seabar Co.
Booth: 943
Hotel: The Elmwood Casino and Motor Hotel
Exhibiting its Thermaply top labeler to mark and apply various sizes and types of heat-seal labels from rolls, such as used in conjunction with automatic wrapping machines, production-line bag packaging operations.

Southern Adhesives Corp.
Booth: 342
Exhibiting details and information about its range of adhesives for packaging and converting. This includes a demonstration of continuous adhesives running in an Acumeter applicator as well as heat-sealing equipment for sealing substrates on which this adhesive has been applied.

Stanford Engineering Co.
Booth: 636 Hotel: Statler-Hilton
Exhibiting its web-guiding unit in model operation and its Model 188 slitter, rewinder, and turret unwind stand.

Stein, Hall and Co., Inc.
Booth: 142 Hotel: Pick-Fort Shelby
Exhibiting its hot-melt adhesives; featuring a new extruder for applying hot-melt adhesives to various films, including polyester, polyethylene, cellophane, foil, and saran to themselves, to paper, and to each other—from 200 to 1000 ft./min.

H. L. Stoker Co.
Booth: 848
Exhibiting for the first time a new air pressure packer—the Stok-Aire—and Model B bag settler.

Sundstrand American Broach
Booth: 223 Hotel: Sheraton-Cadillac
Exhibiting its Packmaster Model 50-A with a new hole punch mechanism which automatically cuts a hole in the package seal area.

Swift and Co.
Booth: 937 Hotel: Sheraton-Cadillac
Exhibiting its new hot-melt adhesives for high-speed packaging; its new adhesives for polypropylene and other films; and its new bottle labelling and tax stamp adhesives along with its full line of packaging adhesives.

Textile Machine Works
Booth: 827 Hotel: Statler-Hilton
Exhibiting a new case sealer.

Toledo Scale
Booth: 913
Exhibiting a line of automatic in-line check-weighers; Model 1070 industrial scale with projection indication; and a line of weighing equipment, including automatic batch control systems, weight recording systems, and counting scales.

Tomkins Label Service
Booth: 604 Hotel: Sheraton-Cadillac
Exhibiting its pressure-sensitive heat-seal, bagheader, foil, gummed and ungummed, continuous-roll and single-

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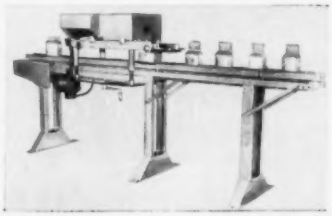
EASE THE COMPETITION SQUEEZE

with Fast—Sure—Low Cost
BAG-CLOSING EQUIPMENT
BY GEORGE H. FRY COMPANY

If the type of package, or the equipment you are now using is responsible for excessive costs — better profits may be in the bag.
FRY Bag Closing Machines have eased the profit squeeze for many manufacturers who decided to package their products in paper bags, or seek more efficient bag closing equipment. Think about it! Without disturbing product quality, quantity or price, you may quickly find new profits via bag closing equipment by FRY.

**Write for full descriptions and details on all FRY Bag Closing Machines; SETTLERS, TUCKERS, FOLDERS, GLUERS, SEALERS. Send sample of your bag for FREE packaging analysis.*



See us at the PMMI Show Booth No. 346 Nov. 7—10

PMMI

GEORGE H. FRY COMPANY • 43 E. Second St., Mineola, N. Y.

WHEELING FOLD-UP tubes

Guarding its well-earned leadership in the auto accessory industry, Permatex looks to Wheeling for dependable service and quality—famous since 1877.

Metal fold-up tubes, standard and custom caps, sifter tops, special tips and fitments.

Ask your WS salesman about your cap and tube requirements, or call collect: CRestview 7-3000.

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Cleveland, Ohio
Academy 6-5757

Cincinnati, Ohio
Parkway 1-5736

St. Louis, Mo.
Parkview 7-7380

Los Angeles, Calif.
Pleasant 2-0791

cut labels. Also exhibiting the Pres-To-Mark marking system for coating, pricing, and imprinting.

Triangle Package Machinery Co.
Booth: 617 Hotel: Statler-Hilton
Exhibiting its Model L22P automatic twin tube bag making, filling, and sealing machine; also single-tube Model L2; and Model DR-1 rotary cup filler for cottage cheese and salads.

Tronomatic Machine Mfg. Corp.
Booth: 111
Exhibiting for the first time its new BlisTpack line for moderate to high production quantities of blister packages. Also exhibiting its new semi-automatic VF2020SA vacuum former, which utilizes a 2x2 forming area.

Union Bag-Camp Corp.
Booth: 309 Hotel: Statler-Hilton
Exhibiting automatic bagging equipment, accessories, corrugated boxes, multiwall and specialty bags; a bagger unit and automatic check weight stand will be demonstrated.

Union Paste Co.
Booth: 342 Hotel: Detroit-Leland
Exhibiting details and information about its range of adhesives for packaging and converting. This includes a demonstration of continuous adhesives running in an Acumeter applicator as well as heat sealing equipment for sealing substrates on which this adhesive has been applied.

United Shoe Machinery Corp.
Booth: 820 Hotel: Cadillac House
Exhibiting its Thermogrip hot-melt adhesive in cord-like form and its co-engineered applying equipment; also a carton-closing unit with Thermogrip hot melt adhesive's instant-set; and other Thermogrip applying equipment.

U.S. Automatic Box Machinery Co.
Booth: 414 Hotel: Statler-Hilton
Exhibiting its fully automatic Universal Brightwood box machine, which forms turned-over end boxes such as for shoes and textiles.

U.S. Bottlers Machinery Co.
Booth: 234 Hotel: Sheraton-Cadillac
Exhibiting for the first time a new adaptation for conversion of its rotary vacuum fillers for filling plastic bottles. Exhibiting a 24-tube pressure vacuum filler for this demonstration.

U.S. Steel Corp., U.S. Steel Supply Div.
Booth: 844
Exhibiting its Model 12 automatic strapping machine.

Van Buskirk and Co., Inc.
Booth: 107 Hotel: Pick-Fort Shelby
Exhibiting for the first time a new automatic imprinting machine handling flat folded cartons, envelopes, bags and tickets from 1x4 in. to 17x30 in. Also exhibiting electronically controlled rotary head lipstick case imprinter, operating at 120/min.

B. Verner and Co., Inc.
Booth: 147
Exhibiting multipress imprinting-marking presses, which run flat folded cartons and other items of paper goods and containers requiring an imprint, at the rate of 7000/hr., with automatic continuous feeding and letterpress im-

pression to match overall printing of containers.

Vertrod Corp.
Booth: 205 Hotel: Sheraton-Cadillac
Exhibiting a line of hand, foot-pedal, and power operated pneumatic and electromagnetic sealers for all thermoplastic films and foam; exhibiting for the first time an extra long sealer; also exhibiting a new gravity-fed bag closer.

Warner Electric Brake and Clutch Co.
Booth: 151
Exhibiting its units ranging from 1 to 15 in. in diameter and in torque ratings from 24 oz.-in. to 1350 lb.-ft. Featuring its Electro-Pack fractional HP clutch-brake unit with input and output shaft extensions. Also exhibiting a line of electric controls with cycle rates to several 100/min.

H. G. Weber and Co.
Booth: 207 Hotel: Sheraton-Cadillac
Exhibiting for the first time, its single size S.O.S. bag machinery; also exhibiting its paper bag machinery, case packing equipment and specialized packaging machinery components.

Weldotron Corp.
Booth: 714
Exhibiting for the first time its new line of heat tunnels for use in conjunction with the new shrinkable films. Also exhibiting for the first time a semiautomatic shrink sleeve wrap machine and a device for effecting shrink packages for small volume manufacturers.

Wirth-Rhodes Corp.
Booth: 752 Hotel: Statler-Hilton
Exhibiting for the first time a new compact model (7-10 ft. long, 30 in. wide). of its Blist-O-Matic automatic blister packager-sealer; it operates at 50/min. and has automatic back-up card feeding and automatic ejection of finished packages.

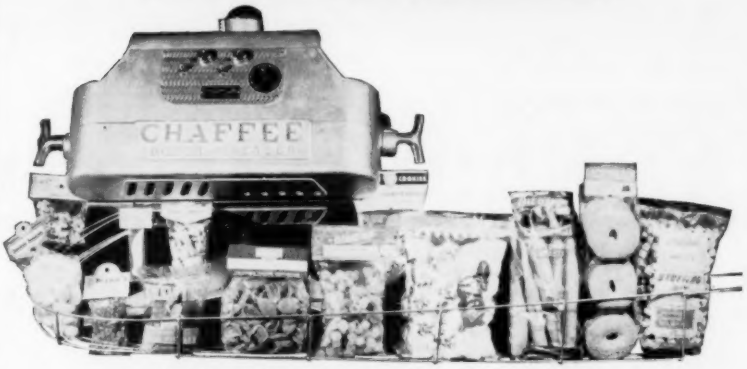
Wolverine Flexographic Mfg. Co.
Booth: 208
Exhibiting details on a new development in flexographic printing; also furnishing information and details on inline printer equipment and other units.

Woodman Co. Inc.
Booth: 815 Hotel: Statler-Hilton
Exhibiting for the first time its Fleet-Weigh Dual-Pac, automatic form, fill, and net weighing unit for large bags, such as for cookies, crackers and snacks.

Wrap-Ade Machine Co., Inc.
Booth: 206 Hotel: Statler-Hilton
Exhibiting for the first time a fully adjustable unit packager; vertical continuous motion tablet or metal parts automatic feed unit packager; and pneumatic jaw sealer.

Wright Machinery Co.
Div. of Sperry Rand Corp.
Booth: 507 Hotel: Statler-Hilton
Exhibiting for the first time units of its packaging machinery that includes its new large volume weigher, and the 175 Hamac-Hansella Transwrap. Also exhibiting the Junior Weigher, the Wrightronic checkweigher, and other bag making, filling and sealing equipment. *(End)*

CHAFFEE ROTOR-SEALER



Production Line Heat Sealing The #1 Choice

WHY? Because it heat seals all popular sealable materials. You may change your package from sealing bag top labels on cellophane, polyethylene, pliofilm and saran to the sealing of unsupported films, viz; cellophane, polyethylene, pliofilm, vinyl, and all heat sealable films by simply turning the thermostat dial. Automatic Infeed, Code-Dater & Hole Punching device available.

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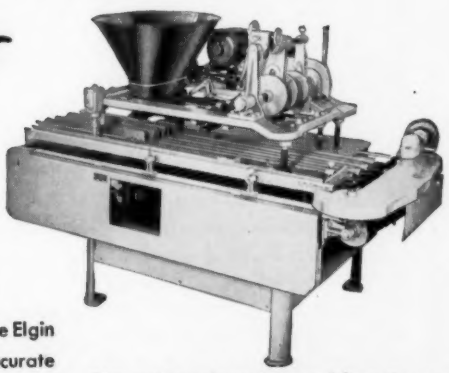
Elgin
EARNS ITS WAY

"QUAD"

For Liquid and Viscous Products



Ideal for glass or tin containers, the Elgin "Quad" is the highspeed, accurate producer—easily and quickly adjusted for fill, and speed! The piston stroke which governs fill in all 4 valves is easily controlled by a single micrometer screw adjusting handle. The upper table assembly is quickly adapted to all container heights by a single hand wheel.

You reduce air pockets and foam to an absolute minimum with the Elgin "Quad" bottom fill. The "Quad" is a proven success with light or heavy packs—is easy to clean—and earns its versatile way with trouble-free deliveries.

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200 Brook Street, Elgin 1, Illinois

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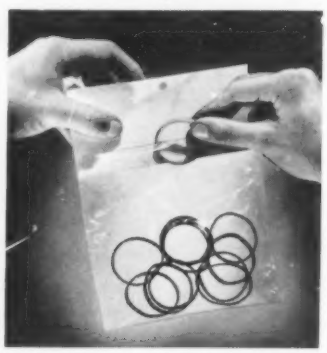
ANNOUNCEMENTS

OF MACHINERY AND PRODUCTS

A SERVICE TO READERS: To get more information follow directions on Reader Service Cards inside front cover or write direct to manufacturer.

1—Bag has own header

The printed paperboard header comes already attached to the new header bag known as the



Label-On. The header is interleaved between the polyethylene walls of the bag and provides a flap for quick opening and loading by hand or machinery. Jaw or rotary heat sealing closes the bag. Perforated headers are available for rack display. Vent holes are unnecessary because the package construction prevents any trapping of air regardless of the sealing method used, according to the maker.

Circle code number or write: Plastic Packaging Co., Dept. PE, 2035 Charleston St., Chicago 47, Ill.

2—Portable detector spots tramp metal in tablets

Capable of detecting and rejecting tablets, pills, or capsules containing minute amounts of metal particles, this new tramp metal detector is portable and self-contained. An attendant simply wheels it to a tablet press and hooks it up (115-v. power plus the plant compressed air line). It detects

5 milligrams of ferrous or nonferrous metals in any shape or form. The operator feeds the tablet press output into a rotary feeder. The tablets pass through a detection chute where they are electrically inspected for metal contamination. An air blast deflects tablets containing metal into a reject container. The detector handles tablets up to ⅝ in. diameter and inspects tablets at speeds up to 4,800/min. There is one sensitivity control which has digital indication. The entire unit is on casters that have locking wheels.

Circle code number on card or write: Arthur Colton Co., Dept. PE, 3400 E. Lafayette, Detroit 7, Mich.

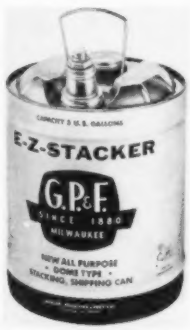
3—Thumb guides ink flow

Thumb or finger pressure operates the pump feed of the new FR-100 Fountain stencil roller, giving the operator control of ink feed for light or heavy marking. A pump feeds a measured quantity of ink on each stroke from the reservoir in the handle to the inside core of the synthetic foam rubber roller. Smooth rolling action applies the ink to the stencil. The reservoir holds 3 oz. of stencil ink to mark approximately 1,000 addresses. The roller uses Marsh K-1 ink, which meets federal specifications, the maker notes, adding that the synthetic roller is easy to clean, and replace.

Circle code number on card or write: Marsh Stencil Machine Co., Dept. PE, Belleville 5, Ill.

4—Spout flips, can stacks

A high-dome recess in the bottom and a spout that goes in the can inverted for shipping



make the new E-Z utility can easy to stack. This container comes in 5-gal. and 40-lb. capacities. When a user reverses the pouring spout and reinserts it for pouring, the pail handle cannot get in the flow of the contents; there is a dome construction in the top that stops the pail from moving farther. The maker says cans stack three high without the center can popping out.

Circle code number on card or write: Geuder, Paeschke & Frey Co., Steel Package Div., Dept. PE, 324 N. 15th St., Milwaukee 1, Wis.

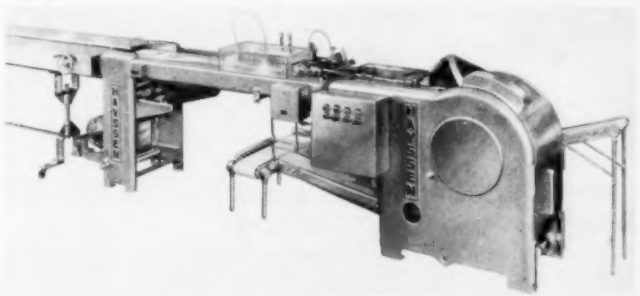
5—Sealer closes bag with tape, can make tear tab

Wrapping a pressure-sensitive tape around the top of a polyethylene cellophane or cloth bag, the new S-605 automatic bag sealer runs at speeds up to 80 bags/min. The seal itself is a short one-piece length of tape. However, this machine can laminate a shorter length of paper to the tape during sealing to form a Y-shaped paper tab for easy breaking of the seal. In operation the taping head can tilt at various angles. Filled bags (either hand-fed or conveyed) go to the machine's gathering and taping mechanism. Then the machine gathers each bag instantly and automatically, applies the tape, cuts and buffs it in place, and ejects the sealed bag from the machine. The speed of the machine, driven by a ¼-h.p. motor, depends on bag size and conveying system used. A quick threading mechanism permits easy tape roll replacement. Spring-loaded gathering wheels of the taping mechanism protect the operator's hands. The machine uses tape from ⅜ to ½ in. wide and up to 9 in. in diameter. The length of each tape seal depends on size of bag and caliper of film.

Circle code number or write: Minnesota Mining and Manufacturing Co., Dept. PE, 900 Bush Ave., St. Paul 6, Minn.

6—Unit wraps food items without using stiffeners

Packaging individual portions of bakery products or caterer's items at speeds up to 100 bags/min. without cards or stiffeners, the new RT machine bridges the gap between vertical bag form-fill-seal equipment and standard overwrap machines. The product feeds by conveyor at spaced intervals. At the start through the machine, which uses horizontal continuous motion, the product rides up on a moving belt formed by a web of



Visit Booth 916 at the P.M.M.I. Show, Cobo Hall, Detroit, Michigan, November 7-10 to see General's NEW Mighty Midget Automatic Case Sealer-Gluer go through its paces. No other case sealer-gluer does so much in so little floor space:

- **Seals up to 50 cases per minute, in a machine with an overall length of only 9 ft. including compression!**
- **Employs unique, new concept of adhesive application!**
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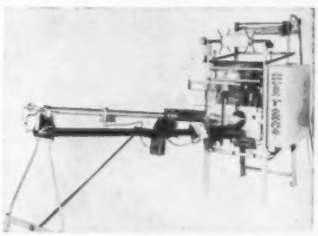
Semi-Automatic	Tape Sealing	Dextrin
Automatic	Glue Sealing	Resin
Self-Adjusting	Custom-Built Specialty Machines	Hot-Melt

packaging material. The machine then folds around the product and heat seals it to form a continuous tube. Next, it picks up the tube and pulls it around a large drum. As the tube containing the product winds onto the drum, a scissors-like sealing and cut-off die closes on the gap between the individual pieces of product. After a half turn on the drum, the package is completely heat sealed, cut loose, and deposited on a conveyor. Adjusting automatically to differences in product length, the new unit wraps and seals short or long items at random. *Circle code number on card or write: Hayssen Manufacturing Co., Dept. PE, Sheboygan, Wis.*

7—Form-Fill-Seal Unit

Just one cycle is enough for this new form-fill-seal machine to form the package, feed the



product, and seal the sides and ends. A positive feed (not gravity) handles the product with forming mandrel shapes to suit. The feed mechanism can be horizontal, downhill or uphill, and the forming tube, round, oval or flat. This machine uses rolls of plain or shrink-type polyethylene from 0.00075- to 0.003-in. thicknesses. Products can range in size from 5 to 16 in. long and from 2 to 6 in. wide. Air-operated for cycle flexibility, the machine averages approximately 30 packages/min. Changeover time for size change is under 10 min. There is electric eye registration for printed film or mechanically controlled package length for plain film. The basic machine measures 38 in. wide, 36 in. long

by 72 in. high, plus product feed mechanism.

Circle code number on card or write: Pratt Manufacturing Corp., Dept. PE, 3097 W. Mill Rd., Milwaukee 9, Wis.

8—Vibratory Feeder

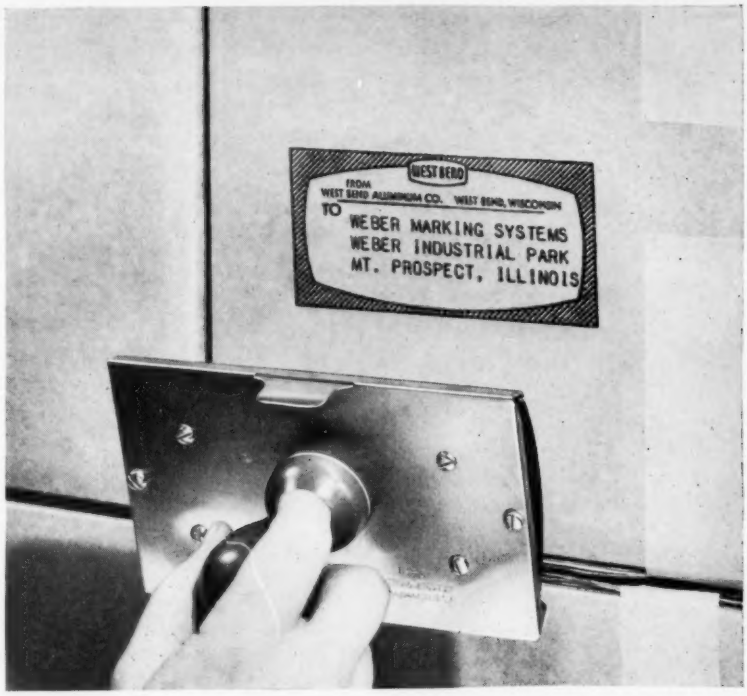
A vibratory parts feeder, electromagnetically powered, feeds parts up to 4 in. long in a 24-

in. cast aluminum bowl. This new feeder unit, the Elk-O-Matic Model 251, has a base unit containing an electromagnetic drive. This operates at a rate of 3600 vibrations/min. A separately equipped rheostat control changes the alternating current to a vibrating direct current that powers the electromagnetic drive. The vibrations move the parts up and around a spirally inclined 1¼-in. track on the inside perimeter of the bowl. From here the parts discharge at a predetermined rate. Changing the rheostat control increases or decreases the rate.

Circle code number on card or write: Elk Engineering Works, Dept. PE, St. Marys, Pa.

9—Sealing Conveyor

A new sanitary bag sealing conveyor permits handlers to work along the conveyor belt as they package all sizes and kinds of sandwiches. This unit, the Mercury, is of stainless steel and has a sandwich bag crimper and heat sealing device. It accommodates various sizes of bags without change or adjustment. This conveyor has a three-



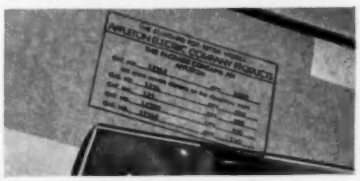
These labels can't come off

They're facsimile labels. You print them directly on cartons. Saves cost of real labels. Faster than brush stenciling. Cuts shipping losses.

Here's a fast, systematic way for addressing multiple shipments. In one easy motion, you can imprint both a facsimile label and customer's address directly on a carton. 30 to 40 cartons can be addressed in a minute. No label to type or apply; no ink brushes and stencilboards to wield. Facsimile labels are sharp and clear, yet can be easily blocked out for re-handling by consignee.

All that's needed is a Weber handprinter and Kustom-Kut stencil. Stencils are die-cut with facsimile of your label. All you do is type the customer's address on the stencil and attach to the printer. Fast, neat, systematic and inexpensive. Write for full details on the Weber Facsimile-Label System.

Good for product identification marking too



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Technical & research libraries
Everyone concerned with what is being written in the world of packages

We recently were appointed American agents for Packaging Abstracts, published by the British research association PATRA—The Printing, Packaging & Allied Trades Research Association. This service gives you in a single, handy periodical (5½x8½ in., averaging 75 pages a month, plus the annual index), brief summaries of packaging articles that have appeared in some 200 packaging magazines plus over 150 magazines devoted to printing and allied subjects, and numerous patents, books, pamphlets, and technical data provided by makers of machinery and materials. An average issue carries about 400 abstracts based on literature received from all parts of the world.

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Please send me a copy of *Packaging Abstracts* for 10 days' free examination. I understand that I may return the copy in 10 days and I owe you nothing. If I do not return it, you may bill me $42.00 for a year's subscription.

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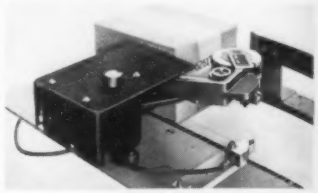
ply Neoprene-impregnated belt, 10 in. wide, which moves at a variable speed of 15 to 30 ft./min. powered by ¼-h.p. motor. *Circle code number on card or write: Mercury Industries, Dept. PE, Hillsdale, N. J.*

10—Automatic Imprinter

A new automatic coder marks corrugated cases on two sides or side and rear in a single pass.



Called the Model 251 Rolacoder, this unit attaches to a conveyor or case sealer and does not require any case-turning devices. Operated by air pressure, the coder rolls its imprint mark onto the side surface of a case. After this, it repeats the same or a different mark on the rear surface as the case moves along the line of travel. The marking wheel automatically retracts after each case passes. Then it repositions itself to mark the succeeding case. The unit uses quick-change rubber type. *Circle code number on card or write: Adolph Gottscho, Inc., Dept. PE, Hillside 5, N. J.*

11—Label/Tape Press

The new Mark II label and tape press prints, die cuts, removes waste, and rewinds pressure-sensitive labels or tape in one automatic operation at speeds to 150,000 labels/hr. Using plain tape or label stock, and flexographic plates, Mark 11 prints up to and beyond the edges of the label (bleed printing.) Operating at 75 ft./min., it prints any size or shape up to 2¼ x 12 in. The unit uses rotary die cutting. Its maker says printing plate changes take 10 to 15 sec. and cutting die changes, 60 sec.
Circle code number on card or

Circle No. 296 on Card

DU PONT **PACKAGING TRENDS**

Convenient closure of ALATHON adds spicy eye appeal

This eye-catching new spice container is distinguished by a rotating dispensing disc molded of ALATHON. The closure fits securely, yet turns smoothly to sift and pour. An easy-to-grip turning bar provides extra convenience . . . does away with tiny tabs and split fingernails! And the bright-red color attracts customers' eyes to this improvement.

The closure is molded by G. Felsenthal & Sons, Inc., Chicago, a subsidiary of J. L. Clark Manufacturing Company, Rockford, Illinois, for the C. F. Sauer Company, Richmond, Virginia.

The use of ALATHON resins frequently permits package designers to combine functional improvement with extra eye appeal. How about *your* package? Mail the coupon for more examples and information.

Attractive, high-strength bleach bottle of ALATHON® benefits packager, consumer

Here is a blow-molded bottle designed specifically for its contents—liquid bleach. It's molded of Du Pont ALATHON 7511—a high-density polyethylene resin which provides exceptional strength, toughness and impact resistance. The container is molded with a hollow handle that permits self-venting during pouring—reduces surging. It's light in weight—shipping weights are reduced 25% over filled glass containers. The white-pigmented bottle is anti-static—resists dust accumulation on the shelf.

For consumers, the new bottle offers unbreakability, convenience in holding and pouring, attractive appearance. For the packager, this bottle offers reduced damage in filling, shipping and handling, plus considerable savings in transportation costs. It was designed by Francis Blod Design Associates, New York, molded by Arrow Rubber & Plastic Corp., East Paterson, N. J., for J. L. Prescott Co., Passaic, N. J.

Whether you're thinking of a new package for a new product, or of redesigning a package for an established product, you'll find a formulation of ALATHON ready to do the job. Why not find out more about the harder-working packages at lower cost made with ALATHON. Just mail this coupon.

POLYOLEFINS DIVISION
POLYCHEMICALS DEPARTMENT

DU PONT

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. . . THROUGH CHEMISTRY

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Please send me more information on the above and on other applications in using coatings of ALATHON. (A-17291)

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Saves TIME
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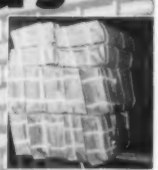
. . . easily and neatly in any direction . . . any angle

molds
. . . to fit any irregularly shaped part or product

holds
. . . contents cushioned against impact . . . dissipates "shock waves" for maximum protection!



Meets Govt. Specs. and Post Office regulations — available in rolls 6" to 84" wide, sheets, special die-cut shapes.

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on your own product! Give us dimensions — we'll send you enough for several wrapping tests.
Available thru Leading Paper Merchants or write.
Chippewa
PAPER PRODUCTS CO., INC.
2425 S. Rockwell St., Chicago 8, Ill.
Eastern Plant: So. Hackensack, New Jersey.

write: Columbia Label Corp., Dept. PE, 4755 N. Talman Ave., Chicago 25, Ill.

12—Parts Feeder

Merely by the switching of interchangeable orientation segments (the unit which governs

the pattern of feeding) the new TransfeRobot parts feeder handles a wide range of parts. It has a vibratory base and comes in two sizes of feeder bowls (18 and 24 in.). The interchangeability of segments does not affect the tuning of the base and lets the machine feed, orient, and dispense parts for packaging without needing separate feeders for radically different parts. Five standard segment designs for each bowl size cover a wide range of orientation needs. The design of the standard segments lets the parts flow through the orientation devices without being crowded. This produces a higher output of properly oriented parts at the discharge point. The control is of static type and accepts direct inputs from external sensors such as photo-electric, infrared, and ultrasonic proximity devices.

Circle code number on card or write: Robodyne, U. S. Industries Inc., Dept. PE, Silver Spring, Md.

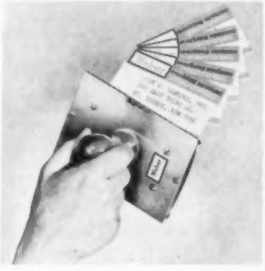
13—Container Marker

Designed to mark plastic containers, a new Kiwi unit has a rubber belt on a cylinder that spaces out the items for marking. The arms and ink tank are combined into one unit which has a self-controlling mechanism. This machine can mark a container on top or side or print around its circumference.

Circle code number or write: Kiwi Coders Corp., Dept. PE, 4027 N. Kedzie Ave., Chicago 18, Ill.

14—Ink For Stenciling

Hand printing devices that print from a stencil now do multiple marking on nonporous surfaces. This is possible because a new ink formulation, All-Mark, makes the ink compatible with stencil use. It permits the stencil marking of surfaces previously marked individually because it is a paint-type ink. The maker says this allows the marking of



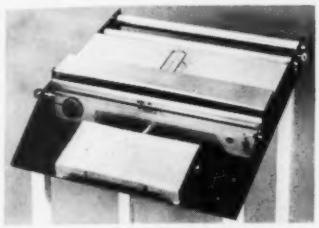
plastics, glass, metal, cellophane, rubber, and other such surfaces. While the ink dries in a few seconds, an emollient solution, Sta-Moist, saturates a felt strip in the hand printer pad to keep it soft.

Circle code number or write: Weber Marking Systems, Inc., Dept. PE, Weber Industrial Park, Mount Prospect, Ill.

15—Wrapper/Bander

A hinged platform on the new model 600 Kwik overwrap and bander provides consistent package positioning and lets the operator keep the work close to the wrapping point. Lifting the platform exposes the roll threading point for speed and ease of roll changes. For wrapping produce, poultry, cheese, baked goods, etc., one operator

can wrap up to 20 packages/min. using any work table. The unit is 22 in. wide and 26 in.

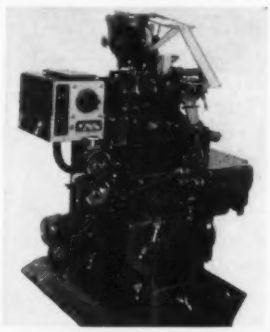


deep and handles film rolls up to 20 in. wide. Molded rubber guides maintain film position, and a tension control mechanism regulates film flow. There is a 6x12-in. Teflon-covered hot plate which has a cast-in Chromalox element—600 watts, 115 volts, a.c. A steel film perforator makes round perforations to permit the breathing of produce inside packages. A spring-loaded and rheostat-controlled tension control mechanism automatically maintains the correct temperature. This unit is also available in two- and three-roll models.

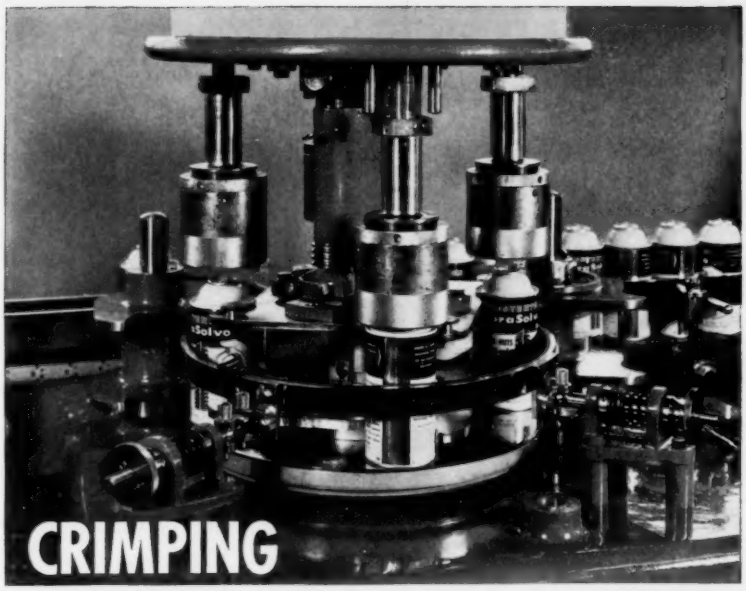
Circle code number on card or write: Heat Sealing Equipment Co., Dept. PE, 3409 Superior Ave., Cleveland, Ohio.

16—Wrapping Machine

The paper splicing unit of this new high-speed cut and wrap machine provides continuous



paper feed for uninterrupted production. At speeds to 750/min., this unit, the Forgrove 42C, cuts and wraps toffee, caramel, or high-boiled sugar in a highly viscous state. Equipped with a rotary (instead of guil-



OVER 1,000,000 CANS ....and going STRONG

A recent customer reports the new CAPEM Automatic Rotary Crimper for Aerosol Valves delivers more than a million cans without a sign of jaw or plunger wear or misalignment. The crimper assembly holds well within crimping tolerance throughout the entire run.

The machine features a completely mechanical operation . . . no *air* required. During the crimping operation, a mechanical plunger drops over the valve and expands 6 precision-tooled segments for crimping contact. When the plunger retracts, the segments snap back into position for positive release of the can *before top pressure is released*. The crimping operation is further protected by Consolidated's built-in accuracy of container handling and centering, with automatic pre-seating of unseated valves.

Crimper jaws are adjustable to provide depth of crimp desired. The machine, with adjustable turret, can be easily set for proper crimp height and top pressure.

The Model C-4-SC, 4-spindle operation shown, will handle any size can with standard 1" valve at speeds of 110 to 120 containers a minute. Faster six and eight spindle machines are available.

For complete information, write Sales Manager

SEE THIS NEW **CAPEM** AUTOMATIC ROTARY CRIMPER AT THE PACKAGING SHOW NOVEMBER 7 to 10 DETROIT

CONSOLIDATED PACKAGING MACHINERY CORPORATION

A Subsidiary of International Paper Company

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You can enjoy the advantages of large-volume shippers

NOW — At a price well within the reach of the smaller shipper, the new BETTER PACK 555 ELECTRIC tape dispenser will give you the safest, strongest, fastest carton closures in America! GOOD CUSTOMER SERVICE starts with prompt, intact delivery of your product... and prompt, intact delivery starts with securely "laminated" closures. See for yourself!

Write name, company and address on margin and send to:

Better Packages, Inc.
Shelton, Conn.

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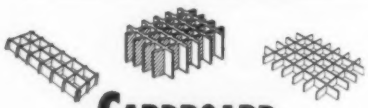

CARDBOARD PARTITIONS
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If you now use an old-fashioned method... change to CARDBOARD PARTITIONS! They not only cost less—but provide more effective protective packaging

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124 BOERUM PLACE BROOKLYN 1, N.Y.
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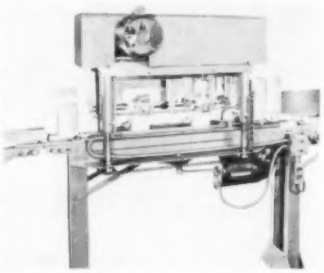
lotine) paper knife, electrical speed controls and speed indicator, the machine twist-wraps cylindrical, rectangular, or square shapes. It wraps with plain or printed cellophane, waxed paper, or reinforced foil outer wrap. A simple handwheel adjustment regulates the exact number of pieces per pound.

Circle code number on card or write: Package Machinery Co., Dept. PE, East Longmeadow, Mass.

17—Bag Tucking Machine

Automatically tucking paper bags before they enter a bag closing unit or heat sealer, the

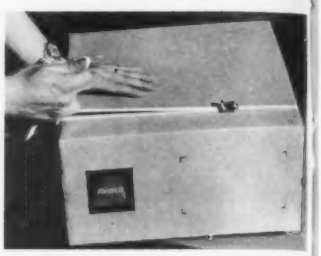


Tommy Tucker machine runs at 20 to 50 bags/min. It feeds in each bag individually (regardless of bag spacing on a conveyor belt) and does not require synchronizing with the filter. Designed to feed any Fry model bag closing machine, this unit normally operates on the line between the settler and the bag closer. First it tucks in the ends of a bag, then flattens the top for proper feeding to the closer. It handles automatic bottom bags. The range is from a minimum of 3 in. face x 2⅛ in. depth to a maximum of 5½ in. face x 3½ in. depth. Pack heights are 3 to 9 in. Changes can be made on basic machine to accommodate larger sizes. The maker says bag height indicates speed height changes; it takes 1 min. for a change.

Circle code number on card or write: George H. Fry Co., Dept. PE, 42 E. Second St., Mineola, N. Y.

18—Strapping Buckle

One-piece galvanized steel buckles are now available to fit all widths of Avistrap cord



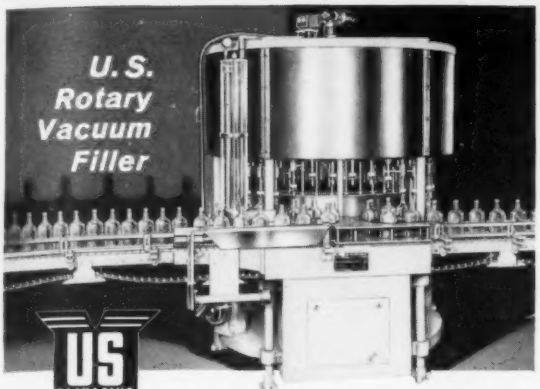
strapping from ¼ to ¾ in., including the heavy-duty ⅝- and ¾-in. widths. There is no precutting and users may apply the strapping to all types of containers right from the coil. The maker says the buckles go in place without tools and assure 90 per cent efficiency. One-piece tools are available to re-tension settling loads.

Circle code number on card or write: American Viscose Corp., Industrial Packaging Dept., Dept. PE, 1617 Pennsylvania Blvd., Philadelphia 3, Pa.

19—Hand Heat Sealer

A sealing wheel with a surface of sprayed and baked Teflon is a feature of the newest plastic-form sealer. The sealer also has a back-up mat, high temperature oil, and wire stand. It seals all sizes of plastic bags, including individual items. A 22½-watt heater (110/120 volts/ac) heats the sealer to approximately 265°F. For lightweight bags, the normal force between roller and bag is approximately ¼ lb. and the linear sealing speed is approximately 6 in./sec. For heavier bag materials, the operator increases force and reduces speed slightly. Repeating the sealing process twice on each side seals very heavy materials, e.g., with thickness greater than 0.004 in.

Circle code number on card or write: Era Research, Inc., Dept. PE, 1009 Montana Ave., Santa Monica, Calif. *(End)*



US PACKAGING ENGINEERS

Basic Model NC-45 fills hot or cold liquids into containers up to 3⅛" dia. at 450 p/m

Hundreds in Use

YET, NO TWO ALIKE!

The name, "U. S. Rotary Vacuum Filler" represents a wide line of models rather than an individual machine. These are basic models that vary in capacity from 16 to 45 filling tubes and are designed for implementation with standard adaptations to serve the individual requirements of each user. *No two machines are ever alike.*

Thus, U. S. filler engineering provides both: the efficiency of a custom-built machine and the practicability of standard machine parts. This together with exclusive features provides the lowest filling cost possible. For full details, please write for the "Rotary Filler Bulletin."

Most Versatile Multiple Filler

MODEL B-49 STRAIGHT-LINE VACUUM FILLER. For liquids and semi-liquids. Fills 4 to 9 containers simultaneously. Adjustable for all container heights up to 14". Stainless steel is standard; plastic on order. Discharge conveyor is optional. Write for "Bulletin B-49".

Continuous Filling

MODEL B-2 VACUUM FILLER. Fills 2 containers while 2 filled containers are being removed and 2 empties loaded. Handles containers up to 4¼" dia. up to 13" high. Stainless steel construction. Plastic available. Write for "Bulletin B-2".

For All Liquids • All Containers

Also for foamy products that do not permit agitation. Stainless steel filling tubes. Fill controlled automatically. Glass lined tank. No power required. Write for "Siphon Bulletin".

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Automatic Checkweighing FROM Milligrams TO Kilograms

If you are interested in high speed, high precision automatic weighing of low weight range objects, you should consider Mettler checkweighing equipment.

Mettler automatic equipment is presently used to control production of aspirin, golf balls, ping pong balls, batteries, billets, bullets, butter, buttons, canned goods, cigarettes, dental supplies, foodstuffs, gold nuggets, hammer handles, magneto magnets and missile parts. In short, everything from dehydrated soup to zinc nuts.

Mettler checkweighing balances and their associated control unit outputs are used for physical sorting, control of machinery, or statistical control of production. Relay as well as analog output permit use with a wide selection of standard auxiliary control elements.

These balances, complete with any one of twelve control unit types, are available from stock in capacities of 1, 3, 10, 30, 100, 300, and 1000 grams. Weighing speeds of 40 to 90 per minute can be easily achieved, either with a Mettler standard transport system or a system of your own design.

How does automatic weight control fit into your production picture? Write for complete data on Mettler KWA checkweighing equipment and on feeding and sorting systems.

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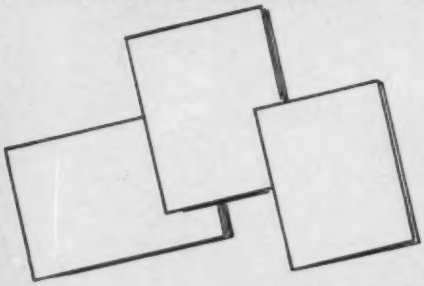
INDUSTRY LITERATURE available free



A SERVICE TO READERS: To get free copies of this literature follow instructions on Reader Service Cards inside front cover or write direct to manufacturer.

101—Collapsible Tubes

Available is a reference booklet for selecting and specifying collapsible tubes, plastic closures, and custom-molded tips and caps. For more information write: Wheeling Stamping Co., Dept. PE, Wheeling, W. Va., or *circle number on card.*

102—Blister Sealer

A 4-page brochure illustrates and describes the Blist-O-Matic, a fully automatic blister packager-sealer which seals blisters to cards and ejects finished packages at a rate of 3,000-5,000 finished packages/hr. Range of card sizes handled and machine dimensions are also included. For this brochure write: Wirth-Rhodes, Inc., Dept. PE, 1914 W. 14th St., Chicago 8, Ill., or *circle number on card.*

103—Flame-Retarder Barrier

Pyro-Kure, a barrier material with flame extinguishing properties, is described in a brochure. Nontoxic and noncorrosive to metals, it releases a gas that tends to smother flames. For this brochure write: American Sisalkraft Corp., Dept. PE, Attleboro, Mass., or *circle number on card.*

104—Case Former, Packer

Photos and captions give information on the operation of Model RH-S-D case former integrated with Standard-Knapp Model F case packer. For this material write: Caral Packaging Machinery, Inc., Dept. PE, 579 Cleveland Ave., Albany, Calif., or *circle number on card.*

105—Bag Feeder/Tube Filler

Data sheets are available on three Arenco machines: bag feeder and opener, high-speed tube filler, and polyethylene tube filler-sealer. For this data write: Arenco Machine Co., Inc., Dept. PE, 25 W. 43rd St., New York 36, N.Y., or *circle number on card.*

106—Conveying Equipment

An illustrated 4-page brochure gives details on single-belt, double-belt, triple-belt, and multiple-belt conveyors for various packaging job needs. For the brochure write: Doughboy Industries, Inc., Mechanical Div., Dept. PE, New Richmond, Wis., or *circle number on card.*

107—Stencil Cutter

Data is offered on stencil cutting machines, including quarter cutter, housed speed-model, semi-housed model, and jumbo-sized model. For this data write: Diagraph-Bradley Industries, Inc., P.O. Box 269, Dept. PE, Herrin, Ill., or *circle number on card.*

108—Self-Service Packaging

Pamphlets are available on a new packaging system for self-service produce and cheese products. The use of 75 PW Vitafilm for fruits and vegetables and 50 F-10 Vitafilm for cheeses is explained in detail. For the pamphlets write: The Goodyear Tire and Rubber Co., Packaging Films Dept., Dept. PE, Plant C, Akron, Ohio, or *circle number on card.*

109—Caser Models

An 8-page folder describes 13 automatic and semiautomatic Sureway caser models. It includes pictures and specifications on set-up machines, loaders, and sealers; floor plan drawings of operations; and sketches of various patterns handled. For this folder write: Food Machinery and Chemical Corp., Stokes and Smith Plant, Dept. PE, 4900 Summerdale Ave., Philadelphia 24, Pa., or *circle number on card.*

110—Packaging Problems

Three case histories show how padded shipping bags solved some packaging problems. Two reports are from the service and data processing field; the other on interior packing in a department store. For this literature write: Jiffy Manufacturing Co., Dept. PE, Hillside, N.J., or *circle number on card.*

111—Interior Packaging

A sample folder of 3 grades of Kimpak interior packaging material is available. The three grades are: K-41, a nonstaining cushion; K-31, general purpose; and K-21, low density cushion for absorbent or decorative packaging. Information includes roll widths, embossings, and thickness. For this folder write: Kimberly-Clark Corp., Dept. PE, Neenah, Wis., or *circle number on card.*

112—Paper, Plastic Products

"This Is Kennedy" introduces this company's various paper and plastic products and packaging items. Manufacturing, fabricating, and other facilities for car lining, bags, and other products are described. For a copy write: Kennedy Car Liner and Bag Co., Inc., Dept. PE, Shelbyville, Ind., or *circle number on card.*

113—Urethane Foam

Urethane foam's packaging properties and applications are examined in a 20-page illustrated booklet titled "Urethane foam protection—a fact file for the industrial and commercial packager." For this booklet write: Mobay Chemical Co., Dept. PE, Pittsburgh 5, Pa., or *circle number on card.*

114—Adhesives, Tapes

A pamphlet describes Mystik's plant, equipment, products, and handling

methods. For a copy write: Mystik Adhesive Products, Inc., Dept. PE, 2635 N. Kildare Ave., Chicago 39, Ill., or *circle number on card.*

115—Laminating Adhesives

A technical report from Borden gives data on aqueous foil laminating adhesives and several latices, and discusses foil adhesive problems. For this report write: The Borden Co., Dept. PE, 350 Madison Ave., New York 17, N.Y., or *circle number on card.*

116—Vibration Tests

A reference manual that records actual vibration test results of over 50 varied products is available. Weights of the packaged items tested range from a few ounces to 2,000 lb. Information given in chart form includes the product tested, its weight unpackaged, total weight of product and package, type of container, dimensions of containers, the vibration test method used, and the results. For a copy of this survey write: Gaynes Engineering Co., Dept. PE, 1644 W. Fulton St., Chicago 12, Ill., or *circle number on card.*

117—Micrometers

Data is available on a dead weight micrometer and a deep throat portable. The dead weight micrometer provides 10/1000 of an inch readings, and the portable micrometer calipers up to ½ in. thickness. For information write: E.J. Cady and Co., Dept. PE, 699 N. Harlem, River Forest, Ill., or *circle number on card.*

118—Power Shear

Literature on a standard power shear explains its construction and the materials it cuts. Hand fed, it will cut leather, paper, plastic, cork, rubber, etc., up to 85 strokes/min. For this literature write: Hobbs Manufacturing Co., Dept. PE, 26 Salisbury St., Worchester 5, Mass., or *circle number on card.*

119—Insulated Bags

Literature on Jet-Pak cushioned insulated mailing bags illustrates how items are packaged for mailing, shipping, carry-home, and warehousing. The bags are used for small, fragile, perishable, or frozen items. For this literature write: Jet-Pak, Columbian Rope Co., Dept. PE, Auburn, N.Y., or *circle number on card.*

120—Dispenser And Conveyor

Data is offered on a self-measuring tape dispenser and conveyor which delivers exact lengths of moistened tape for hand sealing top flap seams and conveys the cases by gravity past the operator's station. For this data write: General Corrugated Machinery Co., Inc., Dept. PE, 141 W. Central Blvd., Palisades Park, N.Y., or *circle number on card.*

121—Filler/Labeler Machine

Specification sheets are offered on overhead-drive vacuum and gravity fillers. Literature is also available on MRM continuous-motion, fully automatic labeling machines which feature speeds from 40 to 150 labels/min. and handle a wide range of label sizes. For more information write: MRM Co., Inc., Dept. PE, 191 Berry St., Brooklyn 11, N.Y., or *circle number on card.*

122—Skin Packaging

A 4-page folder describes the Mark III "Stretch-Pak" machine. This unit shrinks and secures a layer of film on both sides of a card. Because the product being packaged fits within a die-cut opening in the card (instead of simply resting on one surface of a solid card), the product is visible from both sides of the card. With manual feeding and loading the machine does the entire operation. For a copy of this folder write: Domningtown Paper Co., Packaging Div., Dept. PE, Downingtown, Pa., or *circle number on card.*

(Turn page)

A BETTER CLOSURE for SMALL PAPER BAGS

UNION SPECIAL'S *Style 60000 D* Bag Closing Machine, producing the exclusive Dubl-Tape closure, is designed to speed packaging . . . cut costs . . . and improve appearance.

- **FAST—Speed to match output of standard filling and weighing equipment.**
- **NEAT—Produces an eye-pleasing, sales-stimulating package with high merchandising value.**
- **ECONOMICAL—Operating cost per bag is at a minimum . . . uses inexpensive cotton thread and paper tape.**
- **VERSATILE—Adjustable for a wide range of bag sizes, short or long runs.**

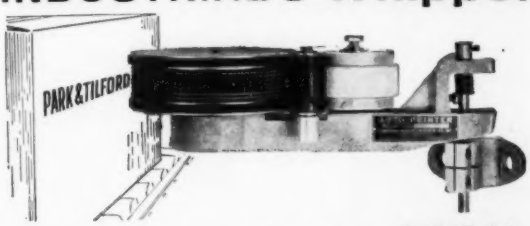
Write for BULLETIN No. 100 to get the complete facts on this machine . . . and how it can do a better closing job for you.

Union Special® MACHINE COMPANY
FINEST QUALITY
487 N. Franklin St., Chicago 10, Ill., U.S.A.

BAG CLOSING MACHINES

Circle No. 304 on Card

NO. 1 SPECIALIST IN THE MARKING FIELD
INDUSTRIAL'S Whippet



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Versatility . . . automatically imprints cartons, bags, rolls, cans, containers and packages — as you need them during production line runs.
Low cost . . . "Whippet" sells low, seldom requires attention or maintenance.
Capacity . . . works non-stop at production lines speeds. No misses or overprints.
Simple Operation . . . attaches quickly and easily direct to conveyor line; non-oscillating friction head uses interchangeable rubber type for clear, legible impressions.
Saves . . . expensive hand stencilling, pre-printing, storage and inventory costs.

Proved practical and economical on almost any marking problem — in plants all over the country — "Whippet" is so simple, well designed and manufactured that experience proves they serve faithfully and profitably far beyond ordinary equipment. See how they can improve your operation.

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BROOKLYN 8, N.Y. | NI 9-3305

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123—Marking Methods

Methods of individualized product marking, labeling, decorating, and identifying are described in an illustrated brochure entitled "Helping your product speak for itself." For a copy write: Markem Machine Co., Dept. PE, Keene, N.H., or *circle number on card.*

124—Colored Gummed Tape

A swatch of colored samples of all-purpose, kraft gummed tapes is available. Natural and colored tapes are in 35- and 60-lb. weights and all have plain or ribbed gumming. The 60-lb. tape also has a tear tab. For these samples write: Gilman Paper Co., Dept. PE, Gilman, Vt., or *circle number on card.*

125—VCI Paper Calculator

A booklet includes a chart for calculating requirements necessary to protect a given area with volatile corrosion inhibitor paper. Rules for handling this material are given. For more information write: Ludlow Corp., Dept. PE, Needham Heights 94, Mass., or *circle number on card.*

126—Dry Product Packaging

An illustrated pamphlet deals with Frazier's complete line of packaging machinery for dry products. Units include volumetric bench, in-line, and rotary fillers; net weighers; and elevator-feed conveyors. For further information write: Frazier and Son, Dept. PE, 20-01 Industrial West, Allwood, Clifton, N.J., or *circle number on card.*

127—Butter Wrapper

An 8-page illustrated catalog describes machines for the automatic precutting, printing, forming, wrapping, cartoning, and overwrapping of butter, margarine and similar products. For a copy of this descriptive catalog write: Lynch Corp., Dept. PE, Anderson, Ind., or *circle number on card.*

128—Conveyor Facts

A 20-page booklet called "Lamson conveyor facts" gives detailed information, specifications, applications, data and illustrations on roller gravity, wheel, belt, and live-roll conveyors. For this booklet write: Lamson Corp., Dept. PE, Syracuse, N.Y., or *circle number on card.*

129—Furniture Pads

Shoksorb furniture pads (3-ply, molded, indented, and in a kraft wrapper) cushion furniture to meet specifications of railroads and truck carriers. For data and samples on this padding write: Kieffer Paper Mills, Dept. PE, Brownstown, Ind., Ind., or *circle number on card.*

130—Tissues

Offered is a fact file with sample swatches of basic paper tissue types which are available for industrial, converting, and specialty applications. It outlines and illustrates the characteristics of each type. For more information write: The Crystal Tissue Co., Dept. PE, Middletown, Ohio, or *circle number on card.*

131—Case Former

A leaflet describes the CK/CO case opener-former-positioner machine with discharge. Operated either mechanically or pneumatically, it runs at the rate of 40 or 25 cases/min. For more information write: Crompton & Knowles Packaging Corp., Dept. PE, 100 Berkshire St., Holyoke, Mass., or *circle number on card.*

132—Transport Simulators

Transportation simulating equipment, including vibration machines, drop testers, and incline impact testers, are described in a 6-page catalog. This brochure contains information on all package testing

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You can cut your gluing costs up to 83% (and more) with FF equipment. Because these amazing units eliminate glue waste . . . minimize clean-up time . . . insure optimum bonding at any operating speed, machine or manual. Standard conversion models for most all automatics. Specials to order. Easy installation. Fully guaranteed. Thousands in use. Write, wire or phone . . .

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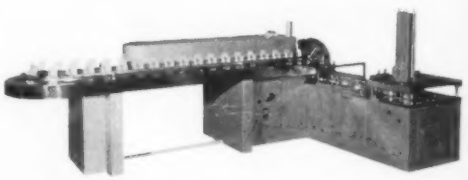

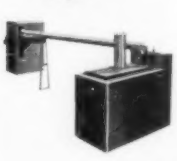

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Hand cartoning eats profits! Fast, economical cartoning is yours with versatile, simple-to-operate Bivans equipment. Proven on scores of production lines, these machines cut labor costs – give you more products with less people.

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equipment produced by the company. For more information write: L.A.B. Corp., Dept. PE, P.O. Box 278, Skaneateles 5, N.Y., or *circle number on card.*

133—Polyethylenes

A 4-page bulletin, No. C-O-135, describes rigid and expandable polystyrene and conventional, intermediate, and high-density polyethylenes. Descriptions, physical properties, and applications are given. For this bulletin write: Koppers Co., Inc., Plastics Div., Dept. PE, Pittsburgh 19, Pa., or *circle number on card.*

134—Cartoning Equipment

Different types of products and containers are shown being cartoned or packed in cases on various types of Jones machinery illustrated in a 19-page booklet. Both automatic and semiautomatic equipment is described. For more information write: R. A. Jones & Co., Inc., Dept. PE, P.O. Box 485, Cincinnati 1, Ohio, or *circle number on card.*

135—Ultrasonic Sensing

Catalog 4-1 is available on Sonac, a system for sensing, measuring, and switching by using high-frequency sound waves that are not affected by dust, steam, smoke, etc. This device can be used for automatic counting, package routing, fill control, web-break detection, and others. For this catalog write: Delavan Mfg. Co., Dept. PE, West Des Moines, Iowa, or *circle number on card.*

136—Cushioning Pads

A 4-page illustrated folder describes the shock absorbing qualities of Hardi-Pads. The pads are made of polyurethane foam reinforced with a rubber tube to prevent settling. For more information write: Hardigg Industries, Dept. PE, South Hadley Falls, Mass., or *circle number on card.*

137—Valve Bag Packer

Information is available on the Air-Pac valve bag packer. The machine uses the fluidizing air principle of conveying powdery and free-flowing materials. For additional information write: E. D. Coddington Mfg. Co., Dept. PE, 5048 N. 37th St., Milwaukee 9, Wis., or *circle number on card.*

138—Piston Filler

Literature is being offered on the Votator piston filler. Claiming higher speed and accuracy with reduced spillage, the filler is available with from 6 to 36 stations. For further information write: Girdler Process Equipment Div., Chemetron Corp., Dept. PE, 2820 W. Broadway, Louisville, Ky., or *circle number on card.*

139—Granular Net Weighers

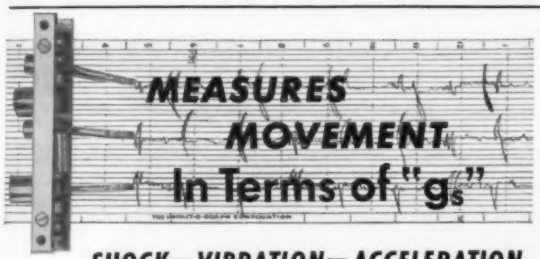
Available is a series of brochures on net weighers for granular materials. Specifications and descriptions of models which have a range from ¼ oz. to 5 lb. are included. For copies of this literature write: B.F. Gump Co., Dept. PE, 1345 S. Cicero Ave., Chicago 50, Ill., or *circle number on card.*

140—Corrugated Box Maker

A revised catalog on the Rite-Size corrugated box maker and auxiliary equipment has been prepared. It includes complete information on operation, applications, box size ranges, improved production rates, and advantages of the machinery. For a copy of this catalog write: Colt Packaging Machinery Co., Dept. PE, 53 Washington Ave., Cranston 7, R. I., or *circle number on card.*

141—Seamless Cans

In product memo No. 111, light and unbreakable metal cans of seamless one-piece construction are illustrated and described. Charts show capacities, dimensions, packing/car-



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IMPACT-O-GRAPH has long been used by engineers and scientists engaged in tests that involve the measurement of movement be it shock, vibration or acceleration.

Where such tests involve the determination of reliability, setting up quality control systems, designing packaging or the measurement of environmental factors, IMPACT-O-GRAPH has approached the accuracy of expensive electronic equipment. Yet this three-directional instrument is compact, self-contained and costs a fraction of bulky electronic shock-testing apparatus. It also provides you with a permanent charted record of test results plus time and date factors, if required.

There are many different models of IMPACT-O-GRAPHS for various purposes. Tell us your requirements and we'll recommend the correct instrument. Also, send for the IMPACT-O-GRAPH brochure for the complete story. Leasing arrangements can be made. Approved by the National Safe Transit Committee.

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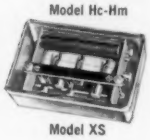

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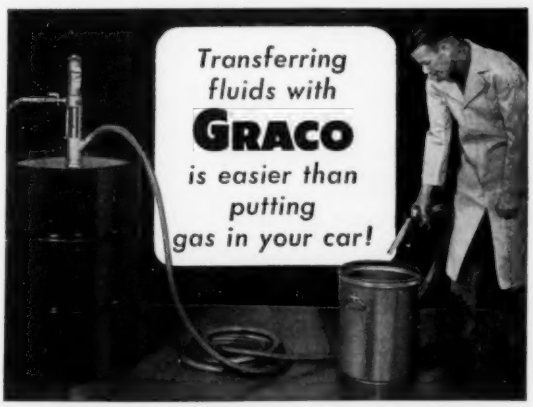

With a lightweight, Graco Fast-Flo pump you can transfer fluids fast, "direct-from-drum!"

Air-powered, there's no danger of sparking or motor burn-outs. Just put the Fast-Flo in a drum and attach plant air line. Pump starts when gasoline type valve attached to hose is opened. Pump stops when valve is closed. *Positive control at valve* provides instantaneous fluid flow . . . eliminates pressure build-up in drum.

Graco pumps are also available in stainless steel. See your nearest Graco dealer or write:

GRACO ENGINEERS & MANUFACTURERS / GRAY COMPANY, INC.
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Minneapolis 13, Minnesota

See Phone Book Yellow Pages "Spraying" for Graco Suppliers

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P.M.M.I. SHOW.
SEE BOOTH #744-746

Designed To Make Your Labeling Faster, Easier and More Economical

- **New unit automatically feeds, handles and places labels of various lengths onto round containers.**
- **No buttons to press, no levers to operate, no hands needed.**
- **Auxiliary manual feed unit for special labeling applications.**
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216 So. Jefferson Chicago 6, Ill.
Telephone: FR 2-1215

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ton, and shipping weights for each type of can. For further information write: Ellisco, Inc., Dept. PE, American & Luzerne Sts., Philadelphia 40, Pa., or *circle number on card.*

142—Cushioning Pads

Available is a brochure on the variety of applications for Edg-Pak cushioning material. Included is a sample and cutaway diagram showing its design and performance properties. For a copy write: Flex-O-Lators, Inc., Edg-Pak Div., Dept. PE, Carthage, Mo., or *circle number on card.*

143—Automatic Capping

Eight different models of automatic bottle-capping equipment are illustrated and described in a 6-page pamphlet. General specifications and a list of users are included. For more information write: Consolidated Packaging Machinery Corp., Dept. PE, 1400 West Ave., Buffalo 13, N.Y., or *circle number on card.*

144—Tape/Label Dispensers

A brochure illustrates a number of tape and label dispensers, including electric and manually operated machines. Units handle kraft, reinforced, gummed, and pressure-sensitive tapes. For this information write: Derby Sealers, Inc., Div. Minnesota Mining & Mfg. Co., Dept. PE, Derby Conn., or *circle number on card.*

145—Aerosol Test Tank Hood

Bulletin LTT-1 contains information on an optional safety hood for an aerosol heat and leak test tank. The stainless steel inspection hood is fitted with shatterproof, safety-glass sliding doors. For this bulletin write: Island Equipment Corp., Dept. PE, P.O. Box 38-276, Miami 38, Fla., or *circle number on card.*

146—Liquid/Semiliquid Fillers

Catalog No. 581-P shows a line of fillers for liquid and semiliquid products. A full range of machine sizes and types is given—from hand-operated to fully automatic rotary models. This catalog has sections for gravity and vacuum type fillers. To obtain a copy write: Horix Mfg. Co., Corliss Station, Pittsburgh 4, Pa., or *circle number on card.*

147—Coated Papers

Information and samples of Polycel and polyethylene-coated papers are available. This brochure discusses automatic packaging with coated papers. For more information write: H. P. Smith Paper Co., Dept. PE, 5011 W. 66th St., Chicago 38, Ill., or *circle number on card.* *(End)*

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Our classified advertising section is intended for use by those wishing to buy or sell used packaging equipment, to employ packaging personnel, seek such employment, offer or seek business opportunities. It is not available for general advertising.

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FOR SALE: New, never used Gottscho Rollaprinter for package printing.

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For Sale
Packaging Equipment

Package Machinery Company Model FA4 Overwrap Machine equipped with belt infeed, electric eye, side belt discharge, Teflon Heater Plates complete with drives rated speed 35 to 65 pks per min.
Automation Weighers and filler machines Model M2 as manufactured by Wright Machinery Company.
This equipment was used for boxing and bagging charcoal briquettes. It also includes F21 Syntron Vibrating Feeders, Tape dispensers, Frazier Model B-1 Bag Filling Machine, Hoppers and Conveyors.
This equipment is located at Iron Mountain, Michigan. If interested, write Reynolds Metals Company, 6601 West Broad Street, Richmond, Virginia—Room 222.

POSITIONS AVAILABLE

Packaging Engineer

Progressive eastern cookie manufacturer desires aggressive individual to take charge of packaging department operations. Prefer person under 45 years with formal training in packaging engineering. Experience working with supervision and employees, also practical knowledge of modern packaging machinery and supplies essential. Salary commensurate with training and experience. All replies will be held strictly confidential. Write Box 10611, PACKAGE ENGINEERING.

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Expanding pharmaceutical firm has an opening in the Quality Control Laboratories for an assistant to the Head of the Package Testing Section. Must be a college graduate preferably with a degree in package engineering and 3-5 years experience in package testing. Duties will include supervising and developing tests for new packaging materials, incoming packaging materials, and new packaging procedures. Must be capable of writing test procedures and comprehensive reports. Good salary and growth potential plus a superior benefit program including profit sharing. Send in confidence a resume to include work experience, education, salaries received, expected salary and personal data to:

Dr. R. P. McCracken
Industrial Relations Dept.
Miles Laboratories, Inc.
1127 Myrtle Street
Elkhart, Indiana

An equal opportunity employer.

Package Engineer

National cosmetic and toiletry manufacturer requires a creative individual with background in package engineering and package development work with knowledge of building materials and package machinery. Excellent opportunity with progressive company. Packaging degree a plus. Send resume and salary requirements to Box 10612, PACKAGE ENGINEERING.

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Supervise 10 to 15 set up mechanics. Must have working knowledge of automatic equipment used in cosmetic & pharmaceutical industry. Fillers, cappers, labelers, cartoners, etc. Good opportunity with established growth company in metropolitan New York suburb. Send resume including salary requirements to: Box PE 1117, 125 W. 41 St., New York.

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What we think

Let's cushion automation's impact on our people

Whether or not to mechanize a packaging line is getting less and less debatable. More and more it is a case of "when" rather than "if." Developments in packaging machinery go hand in hand with rising costs and a tightening profit squeeze to make mechanization attractive, even necessary.

The trend to mechanization, automatic control, and all-out automation runs throughout industry. The individuals displaced from packaging lines often cannot move to other jobs in the same factory. Packaging, along with the rest of industry, must face up to the impact of automation on the individual.

However, reluctance to mechanize because of what happens to certain individuals is no solution. If a company is so tolerant of veteran employees that it keeps them on jobs which machinery could handle more efficiently, it will find that the price of its humanitarianism is a failure to stay competitive.

People who make decisions about packaging lines have a responsibility to do what they can to keep their companies competitive and to bring about growth. Similarly, conscientious managers everywhere know all too well that it is a wasteful disservice to a man not to use his particular abilities and aptitudes fully.

Just the same, a lot of people are going to face downgrading or loss of their jobs. There are some folks you simply cannot retrain for new jobs when mechanization comes in. At the same time, you cannot afford to give them unrealistic severance pay, and you certainly cannot sustain featherbedding jobs.

Can service fields absorb automation's "leftovers"?

Reviewing the observations of those who have given more attention to this problem than we have, it strikes us that the only way to absorb all these people is to create more opportunities in other occupations than manufacturing, including packaging—notably the so-called service field. There has been a trend in this direction for several years. Each year there are more people in distribution and services and fewer people in manufacturing.

Further it appears that public and private services, ranging from health and education through travel and recreation, are earning (or in some cases simply getting) more people and more money. This spotlights a major opportunity for individuals displaced. More and more people are going into noncommercial public service, even cultural activities. Managers responsible for decisions about automation must keep in mind the problem of helping individuals maintain their dignity and worth as well as their occupational productivity.

There is more to this than simply telling, say, a man who used to make wood boxes in your carpenter shop to go get a job repairing picture frames at the local art museum. Just the same, a lot of them face that prospect.

Also, whether we like it or not the function of government seems likely to expand. More people will go on government payrolls or do work that serves government.

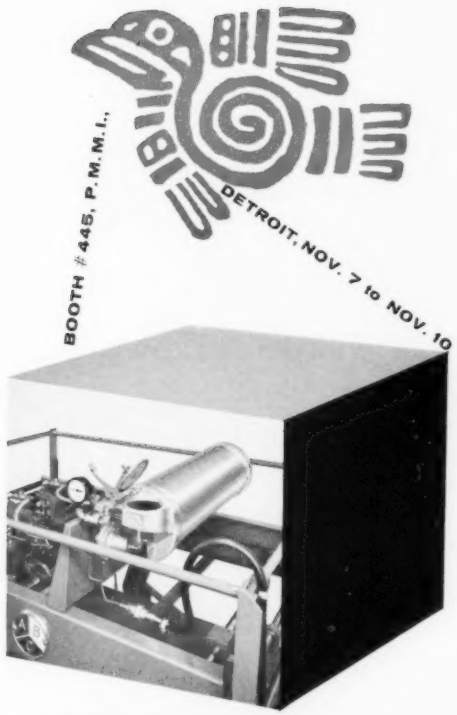
This is no abstract notion. We have at least one clear example in the packaging field. The persistent attempt of the military to move the Quartermaster Food and Container Institute from Chicago to Natick stemmed from the desire of local politicians to beef up the ailing Massachusetts economy by bringing in a governmental activity to employ people and create demands for services.

Our point is that the imminence of mechanization and automation does not mean you can disregard what happens to the people let go. This is a community problem calling for new broad-gauge thinking.

This is no time either for gigantic boondoggles such as the WPA or for managers to knuckle under to shortsighted labor leaders trying to maintain featherbedding in industry. But we do think the time is ripe for a coordinated community-wide approach (in which packaging people can have a distinct part) to see that the individual has a job that preserves his dignity, prevents his mind from going to seed, allows him a sense of participation, and gives him the all-important paycheck.

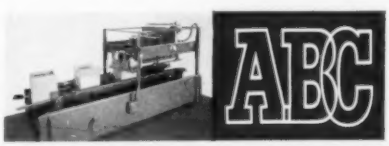
Bruce Hoffman

Editor



see you at the show

See the Dialmizer. It's the automatic sealer with the hermetically sealed pressurized glue system. Dial glue spread desired. No daily cleanup required. See you at the show. Okay?

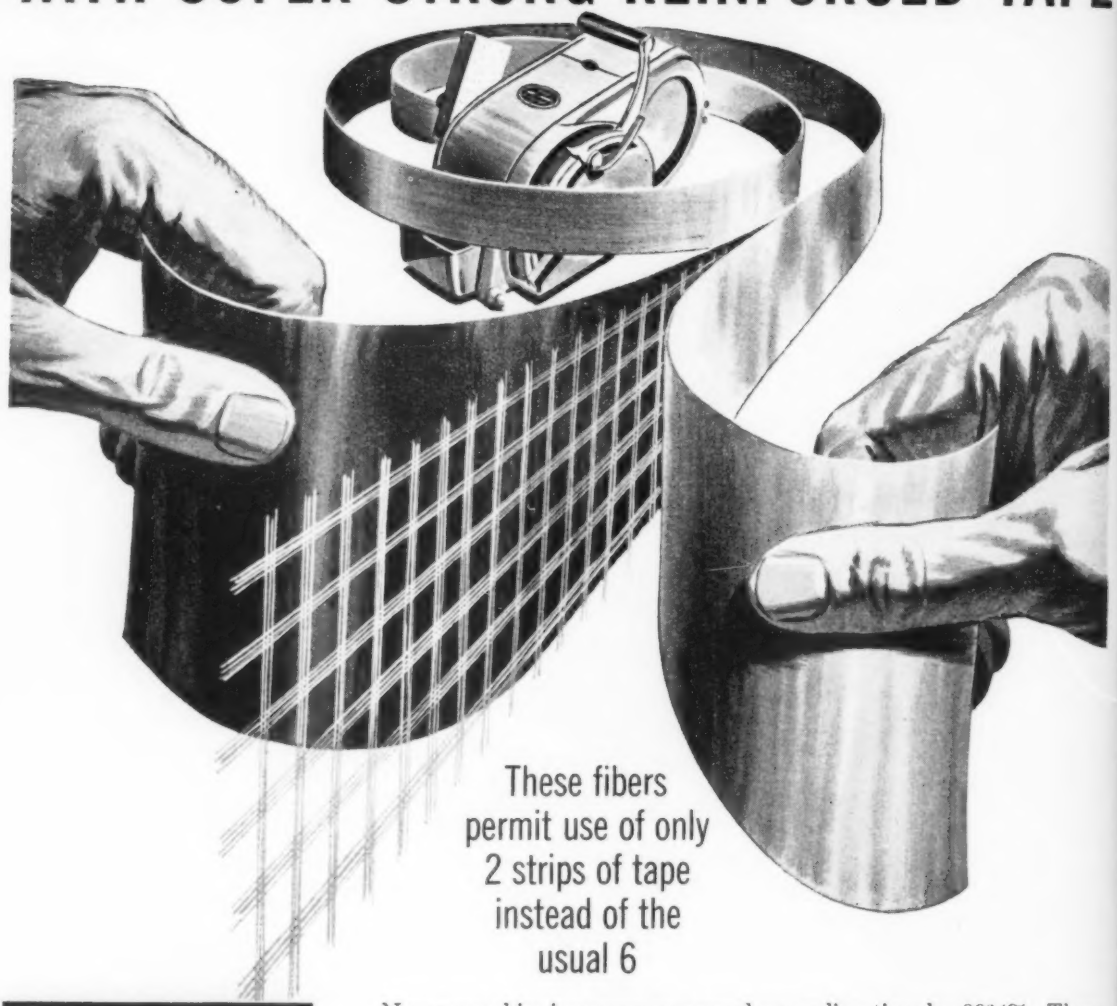


DIALMIZER AUTOMATIC CASE SEALER

A-B-C PACKAGING MACHINE CORPORATION
P.O. Box 1146, Clearwater, Florida

For more information circle No. 311 on Reader Service Card

CARTON SEALING TIME CUT TWO-THIRDS WITH SUPER-STRONG REINFORCED TAPE



These fibers permit use of only 2 strips of tape instead of the usual 6

Now your shipping room can speed up sealing time by 66⅔%. Those steel-like fibers sandwiched between gummed tape provide a safe, sure method of sealing cartons for shipment. Less work and less fatigue . . . a strong carton to protect your product en route.

The amazing strength of *reinforced* tape means only *two strips* are needed instead of the six strips required when ordinary tape is used. This two-strip method is approved by all carriers.

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